HENNY PENNY®
Global Foodservice Solutions

Henny Penny

Humidified Holding Cabinets

Model HHC-980

Model HHC-983

TECHNICAL MANUAL

LIMITED WARRANTY FOR HENNY PENNY EQUIPMENT

Subject to the following conditions, Henny Penny Corporation makes the following limited warranties to the original purchaser only for Henny Penny appliances and replacement parts:

NEW EQUIPMENT: Any part of a new appliance, except baskets, lamps, and fuses, which proves to be defective in material or workmanship within two (2) years from date of original installation, will be repaired or replaced without charge F.O.B. factory, Eaton, Ohio, or F.O.B. authorized distributor. Baskets will be repaired or replaced for ninety (90) days from date of original installation. Lamps and fuses are not covered under this Limited Warranty. To validate this warranty, the registration card for the appliance must be mailed to Henny Penny within ten (10) days after installation.

FILTER SYSTEM: Failure of any parts within a fryer filter system caused by the use of the non-OEM filters or other unapproved filters is not covered under this Limited Warranty.

REPLACEMENT PARTS: Any appliance replacement part, except lamps and fuses, which proves to be defective in material or workmanship within ninety (90) days from date of original installation will be repaired or replaced without charge F.O.B. factory, Eaton, Ohio, or F.O.B. authorized distributor.

The warranty for new equipment covers the repair or replacement of the defective part and includes labor charges and maximum mileage charges of 200 miles round trip for a period of one (1) year from the date of original installation.

The warranty for replacement parts covers only the repair or replacement of the defective part and does not include any labor charges for the removal and installation of any parts, travel, or other expenses incidental to the repair or replacement of a part.

EXTENDED FRYPOT WARRANTY: Henny Penny will replace any frypot that fails due to manufacturing or workmanship issues for a period of up to seven (7) years from date of manufacture. This warranty shall not cover any frypot that fails due to any misuse or abuse, such as heating of the frypot without shortening.

0 TO 3 YEARS: During this time, any frypot that fails due to manufacturing or workmanship issues will be replaced at no charge for parts, labor, or freight. Henny Penny will either install a new frypot at no cost or provide a new or reconditioned replacement fryer at no cost.

3 TO 7 YEARS: During this time, any frypot that fails due to manufacturing or workmanship issues will be replaced at no charge for the frypot only. Any freight charges and labor costs to install the new frypot as well as the cost of any other parts replaced, such as insulation, thermal sensors, high limits, fittings, and hardware, will be the responsibility of the owner.

Any claim must be presented to either Henny Penny or the distributor from whom the appliance was purchased. No allowance will be granted for repairs made by anyone else without Henny Penny's written consent. If damage occurs during shipping, notify the sender at once so that a claim may be filed.

THE ABOVE LIMITED WARRANTY SETS FORTH THE SOLE REMEDY AGAINST HENNY PENNY FOR ANY BREACH OF WARRANTY OR OTHER TERM. BUYER AGREES THAT NO OTHER REMEDY (INCLUDING CLAIMS FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES) SHALL BE AVAILABLE.

The above limited warranty does not apply (a) to damage resulting from accident, alteration, misuse, or abuse; (b) if the equipment's serial number is removed or defaced; or (c) for lamps and fuses. THE ABOVE LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS, AND ALL OTHER WARRANTIES ARE EXCLUDED. HENNY PENNY NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER OBLIGATION OR LIABILITY.

Revised 01/01/07

TABLE OF CONTENTS

Section **Page**

Section 1. TROUBLESHOOTING
1-1. Introduction 1-1
1-1. Safety 1-1
1-3. Troubleshooting 1-1
1-4. Error Codes and Warnings 1-5
1-5. Info Mode 1-8

Section 2. LEVEL 2 PROGRAMMING
2-1. Introduction 2-1
2-2. Tech Mode 2-1
2-3. Stats Mode 2-5
2-4. Data Logging and Manufacturing Mode 2-8

Section 3. MAINTENANCE
3-1. Introduction 3-1
3-2. Maintenance Hints 3-1
3-3. Humidity Sensor Calibration and Replacement 3-1
3-4. Fuse and Fuse Holder Assembly 3-4
3-5. Power Switch Replacement 3-5
3-6. Air Temperature Probe Replacement 3-6
3-7. Transformer Replacement 3-8
3-8. Relay Replacement 3-9
3-9. Module Top Removal 3-10
3-10. Cooling Fan Replacement 3-11
3-11. High Limit - Air Heater Replacement 3-11
3-12. Blower Motor Replacement 3-12
3-13. Air Heater Replacement 3-13
3-14. Speaker Replacement 3-13
3-15. Complete Panel or PC Board Replacement 3-14
3-16. Float Switch Replacement 3-15
3-17. High Limit - Water Heater Replacement 3-16
3-18. Water Heater Replacement 3-17
3-19. Drain Valve Replacement 3-18
3-20. Cleaning Water Strainer 3-19
3-21. Water Valve (Solenoid) Replacement 3-19
3-22. Door Gasket Replacement 3-21
Wiring Diagrams 3-22

Section 4. PARTS INFORMATION
4-1. Introduction 4-1
4-2. Genuine Parts 4-1
4-3. When Ordering Parts 4-1
4-4. Prices 4-1
4-5. Delivery 4-1
4-6. Warranty 4-1
4-7. Recommended Spare Parts for Distributors 4-1
Parts List 4-2

SECTION 1. TROUBLESHOOTING

1-1. INTRODUCTION

This section provides troubleshooting information in the form of an easy to read table.

If a problem occurs during the first operation of a cabinet, recheck the installation per the Installation Section of the Operator's Manual

Before troubleshooting, always recheck the operation procedures in the Operator's manual.

1-2. SAFETY

Where information is of particular importance or is safety related, the words NOTICE, CAUTION, or WARNING are used. Their usage is described below.

SAFETY ALERT SYMBOL is used with DANGER, WARNING, or CAUTION which indicates a personal injury type hazard.

NOTICE is used to highlight especially important information.

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

CAUTION used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

1-3. TROUBLESHOOTING

To isolate a malfunction, proceed as follows:

1. Clearly define the problem or symptom and when it occurs.
2. Locate the problem in the troubleshooting table.
3. Review all possible causes. Then, one at a time work through the list of corrections until problem is solved.

If maintenance procedures are not followed correctly, injuries and/or property damage could result.

1-3. TROUBLESHOOTING (continued)

Problem	Cause	Correction
	OPERATION	
A. Product not holding temperature	• Doors left open	• Keep doors closed except to load and serve product
	• Product held too long	• Hold product only for recommended times
	• Control temperature set too low	• Increase air temperature; (SP-3) in Special Program Mode
	• Bad air heater	• Check heaters and replace if bad; see Tech Mode items 10 and 18
	• Blower not working	• Check blower and replace if bad; see Tech Mode item 18
	• Bad air heater or blower relays	• Replace relay; see Tech Mode items 10 and 18
	• Bad high limit	• Check high limit and replace if bad
	• Low or improper voltage	• Compare receptacle voltage to data plate voltage
	• Door Gasket torn or worn	• Replace bad door gaskets
	• Air probe faulty, open (“E-6A”) or shorted (“E-6B”)	• Ohm out the probe and replace if necessary
B. Cabinet steaming product soggy	• Humidity setpoint too high	• Decrease humidity; (SP-4) in Special Program Mode
	• Water heater probe faulty, open (“E-12A”), or closed (“E-12B”)	• Ohm out the probe and replace if necessary
	• Bad humidity sensor (“E17”)	• Replace humidity sensor
	• Relay stuck closed	• Replace relay

1-3. TROUBLESHOOTING (continued)

Problem	Cause	Correction
	OPERATION (Continued)	
C. Product dry	• Bad float switch (E-18)	• Replace float switch
	• Bad water heater high limit	• Replace high limit
	• Bad water heater	• Check heater and replace if bad; see Tech Mode item 18
	• Humidity setpoint too low	• Increase Humidity Setpoint (SP-4) in Special Program Mode
	• No water in pan	• Check water shut-off valve
		• Clean water valve and replace if necessary
		• Replace auto water relay
	HEATING SYSTEM	
A. Unit not heating	• Bad control board	• Replace control board
	• Bad high limit	• Check high limit; replace if bad
	• Bad air heater or blower relays	• Replace relay
	• Bad air heater	• Check heaters and replace if bad; see Tech Mode item 18
	• Faulty wiring	• Check for loose connections or broken wires
	• Blown fuse	• Change 15 amp fuse
B. Unit not reaching set temperature	• Blower not working	• Check blower and replace if bad See Tech Mode item 18
	• Bad air heater	• Check heaters and replace if bad See Tech Mode item 18
	• Bad air heater, or blower relays	• Replace relay
	• Doors left open	• Keep doors closed except to load and serve product
	• Door gasket torn or worn	• Replace bad door gaskets

1-3. TROUBLESHOOTING (continued)

Problem	Cause	Correction
HEATING SYSTEM (Continued)		
C. Unit Overheating ("E-5")	• Blower not working	• Check blower and replace if bad; see Tech Mode item 18.
	• Bad control board	• Replace control board
	• Relay stuck closed	• Replace relay

1-4. ERROR CODES AND WARNINGS

The display shows the following error codes and warnings when a fault is detected, along with an alarm sound. Both the heat and humidity systems shut down, except when specified otherwise.

Display	Cause	Panel Board Correction
"E-4 CPU TOO HOT"	• Control board too hot; unit overheating or louvers clogged	• Turn switch to OFF position, then back to ON; if display still shows "E-4", the PC board is getting too hot; clean louvers and check cooling fan; replace cooling fan if necessary; once panel cools down, the controls should return to normal; if "E-4" persists, have the PC board replaced.
"E-5 AIR TEMP TOO HOT"	• Faulty relay, PC board, or air probe	• Turn switch to OFF position, then back to ON; if display shows "E-5", check the heating circuits and temperature probe; once the unit cools down, the controls should return to normal; if "E-5" persists, replace the PC board
"E-54A CPU TEMP SENSOR OPEN"	• Faulty PC board	• Turn switch to OFF position, then back to ON; if display shows "E-54A", the control should be re-initialized (see Programming Section); if the error code persists, have PC board replaced.
"E-54B CPU TEMP SENSOR SHORTED"	• Faulty PC board	• Turn switch to OFF position, then back to ON; if display shows "E-54B", the control should be re-initialized (see Programming Section); if the error code persists, have PC board replaced.
"E-6A AIR TEMP SENSOR FAILED OPEN"	• Faulty air probe	• Turn switch to OFF position, then back to ON; if the display shows "E-6", the temperature probe should be checked; once the temperature probe is repaired, or replaced, the controls should return to normal; if "E-6" persists, have the PC board replaced

NOTICE

A humidity error only shuts down the humidity system. If a humidity error occurs, and you want to use the cabinet without humidity, turn the humidity off by following the directions for SP-4, Humidity Setpoint, in Special Programming Section of this manual. Once the setpoint is off, the alarm stops, but the error code shows in display. (Includes "E-12A", "E-12B", "E-17" and "E-18").

1-4. ERROR CODES AND WARNINGS (Continued)

Display	Cause	Panel Board Correction
"E-6B AIR TEMP SENSOR FAILED SHORTED"	• Faulty air temperature probe	• Turn switch to OFF position, then back to ON; if the display shows "E-6", the temperature probe should be checked; once the temperature probe is repaired, or replaced, the controls should return to normal; if "E-6"persists, have PC board replaced
"E-12A WATER HEATER SENSOR FAILED OPEN"	• Faulty water heater probe	• Turn switch to OFF position, then back to ON; if the display shows "E-12A", the water heater should be checked and repaired or replaced (the water heater probe is built into the water heater); the controls should return to normal; if "E-12A" persists, have PC board replaced
"E-12B WATER HEATER SENSOR FAILED CLOSED"	• Faulty water heater probe	• Turn switch to OFF position, then back to ON; if the display shows "E-12B", the water heater should be checked and repaired or replaced (the water heater probe is built into the water heater); the controls should return to normal; if "E-12B" persists, have PC board replaced
"E-17 HUMIDITY SENSOR FAILED"	• Faulty humidity sensor	• Turn switch to OFF position, then back to ON; if the display shows "E-17", the humidity sensor should be checked; once the humidity sensor is repaired, or replaced, the controls should return to normal; if "E-17" persists, have PC board replaced
"E-18 NO WATER, FLOAT SWITCH FAILED"	• Float switch stuck or faulty; faulty relay (stuck on);water pan needs cleaned; loose or faulty water heater sensor; acorn nuts on water heater cover loose, or water heater insulation missing or damaged	• Turn switch to OFF position, then back to ON; if the display shows "E-18", check and clean float switch; clean water pan; have relay and water heater sensor checked and replace if necessary; tighten acorn nuts on water heater cover; make sure 2 complete pieces of insulation are under the water heater cover; if "E-18" persists, have PC board replaced

NOTICE

A humidity error only shuts down the humidity system. If a humidity error occurs, and you want to use the cabinet without humidity turn the humidity o**f** by following the directions for SP-4, Humidity Setpoint, in Special Programming Section of this manual. Once the setpoint is off, the alarm stops, but the error code shows in display. (Includes "E-12A", "E-12B", "E-17" and "E-18").

1-3. ERROR CODES AND WARNINGS (Continued)

Display	Cause	Panel Board Correction
"E-41 SYSTEM DATA LOST"	• Memory Scrambled	• Turn switch to OFF position, then back to ON; if the display shows "E-41", the control should be re-initialized (see Programming Section); if "E-41"persists, have PC board replaced
"E-46 DATA SAVE FAILED"	• Memory scrambled	• Follow directions for SP-9, System Initialization, in Special Programming Section of this manual; if "E-46" still persists, replace PC board.
"PLEASE DE-LIME WATER PAN"	• Water pan needs cleaned	• Follow the weekly cleaning procedures in the Cleaning Procedures Section of the Operator's Manual; this warning will not shut down the heat or humidity
"WATER PAN NOT FILLING, CHECK WATER SUPPLY"	• Float switch stuck or faulty; relay faulty (stuck on); water pan needs cleaned; loose or faulty water heater sensor	• Check float switch and replace if necessary; check relay and replace if necessary; follow weekly cleaning procedures in Cleaning Procedures Section of Operator's Manual; check wires at water heater and replace water heater if necessary (sensor is part of the water heater)

1-4. INFO MODE

This mode records historic information on the holding cabinet and operator performance, which could help in troubleshooting a problem.

Press PROG and INFO at the same time and "*INFO MODE*" shows on display. Press PROG or INFO to access the steps and press DOWN to view the statistics within each step.

Information Mode is intended for technical use, but the Operator can view the following information:

1. Error log - last 10 errors and time they occurred
2. Power up log - time of last 10 power-ups
3. Outputs/Inputs - shows the state of unit's inputs and outputs
   a. OUT S_F_W_A (solenoid, fan, water heater, air heater, relay order from left to right)
   b. AMPS S_F_W_A_
   c. NC/GD S_F_W_A_ (no connect/ground detection on outputs to relays)
   d. All outputs and inputs S_F_W_A_ P_ (power switch input) F_ (float switch input)
4. CPU temperature
5. Cabinet air temperature
6. Water heater temperature
7. Humidity counts value
10. Humidity value
11. Analog inputs

1-4. INFO MODE (Continued)

1. E-LOG (error code log)
Press DOWN and "1A. (date & time) *NOW* shows in display. This is the present date and time.

Press DOWN and if a error was recorded, "1B. (date, time, and error code information)" shows in display. This is the latest error code that the controls recorded.

Press DOWN and the next latest error code information can be seen. Up to 10 error codes ("1B" to "1K") can be stored in the E-LOG Section.

Press P▷ PROG to continue to P-LOG.

2. P-LOG (power-up log)
Press DOWN and "2A. (date & time) *NOW* shows in display. This is the present date and time.

Press DOWN and the latest power-up is shown, "2B. (date, time,) PWR-UP".

Press DOWN and the next latest power-up date is shown. Up to 10 power-ups (2B to 2K) can be stored in the P-LOG section.

Press P▷ PROG to continue onto the outputs/inputs.

3. OUTPUTS/INPUTS
This mode displays the status of components and inputs. If the input or output signal is detected, an identifying letter is displayed (see below). If the signal is not detected, "_" is displayed. Press DOWN to view the following:

a. "S_F_W_A_" shows in the display. If the output is on, "*" shows beside the output letter. Ex: "S*". If the control senses a problem with the output, "*" flashes.
b. "AMPS S_F_W_A_" shows in the display. A Checkmark ("√") beside the letter indicates normal amps . A flashing "X" beside the letter means a problem exists.
c. "NC/GD S_F_W_A_" shows in the display. This monitors a possible problem with the relays on the output PC board. A Checkmark ("√ ") beside the letter indicates means everything on the output PC board is good. A flashing "X" beside the letter means a problem exists.

1-4. INFO MODE (Continued)

3. OUTPUTS/INPUTS (Continued)

d. "S_F_W_A_ P_ F_" shows in the display. If the output or input signal is detected, "*" shows beside the letter. Ex: "S*". If the control senses a problem with the output, "*" flashes.

Press PROG to continue onto CPU TMP.

4. CPU TMP

This step shows the present PC board temperature.

Press PROG to continue onto cabinet air temperature.

5. CABINET AIR TMP

This step shows the present air temperature inside the cabinet.

Press PROG to continue onto water heater temperature.

6. WATER HEATER TMP

This step shows the present water heater temperature.

Press PROG to continue to humidity counts value.

7. HUMIDITY COUNTS VALUE

Factory use only!

Press PROG to continue onto the humidity value.

8. HUMIDITY VALUE

This step shows the present humidity level inside the cabinet.

Press PROG to continue onto the analog inputs.

9. ANALOG INPUTS

This step displays the present status of any channel of the controller's a to d converter. This feature may be useful to a technician troubleshooting a problem with the controller

The displayed value can be toggled between Volts and Bits by pressing YES 1. If the displayed value has a decimal point, it is voltage (0 to 5 VDC). If no decimal point is shown, the value is a-to-d bits (0 - 4095).

SECTION 2. LEVEL 2 PROGRAMMING

2-1. INTRODUCTION

The Tech Mode and Stats Mode in the Level 2 Programming Section, have information that could help in troubleshooting a problem with the unit.

2-2. TECH MODE

Press PROG and hold until "L-2 LEVEL 2", followed by, "SP PROG", shows in display.

Press PROG 3 times and "TECH", followed by, "ENTER CODE" shows in display.

Enter code, 1 1 2 2 1 1 2 2 to access the following items:

T-1 Software
T-2 Cabinet version
T-3 Push button test
T-4 All on display test
T-5 Segments test
T-6 Digits test
T-7 Decimal points test
T-8 LED's test
T-9 Air temperature - circuit calibration
T-10 Air temperature - user calibration/offset/highest value
T-11 Water heater temperature - circuit calibration
T-12 Water heater temperature - user calibration/offset/highest value
T-13 Humidity - circuit calibration
T-14 Humidity sensor - calibration/offset; specific value sent with each humidity sensor
T-15 Humidity- user calibration/offset/highest value
T-16 CPU° - Control temperature - highest value
T-17 View ADC channel
T-18 Outputs/inputs; on outputs steps use the following hidden buttons [1-5] to toggle on the outputs; [2] - solenoid valve, [3] - circulation fan, [4] - water heater, [5] - air heater.
T-19 Total init – initialization of programming areas and statistics.

PROG moves you forward through the above selections and INFO moves you backwards through the selections.

2-2. TECH MODE (Continued)

T-1: Software
This section shows "PN/ID/SRL"
Press 1. Henny Penny eprom part number is displayed.

Press 2. Customer ID (i.e. Pizza Hut) is displayed

Press 3. Software revision is displayed.

T-2: Cabinet Version
Shows the model number, e.i. HHC-983

T3: Push Button Test
Press any button on the control and a digital display feedback confirms the button is working

T4: All On Display Test
Press any of the product buttons and every LED on the 16 digit display lights

T5: Segments Test
Repeatedly pressing any product button lights one segments in every one of the 16 digit displays

T6: Digits Test
Repeatedly pressing any product button lights all segments in one of the 16 digital displays (scrolls though all 16)

T7: Decimal Point Test
Repeatedly pressing any product button lights a decimal point (DP) in one of the 16 digital displays (scrolls though all 16)

T8: LED Test
Repeatedly pressing any product button lights individual LEDs (scrolls though all LEDs)

T9: Air Temperature - Circuit Calibration
Factory use only

2-2. TECH MODE (Continued)

T10: Air Temperature - Calibration/Offset/Highest
A user calibration to make sure the display shows the actual air temperature
Press and hold 1 and use ▽ DOWN △ UP to set the display to match the actual temperature. (+/-15° F)

Press and hold 2 to change the amount of the offset.(+/-15° F)

Press and hold 3 to view the highest air temperature recorded.

Press ▽ DOWN to reset highest temperature.

T11: Water Heater Temperature - Circuit Calibration
Factory use only

T12: Water Heater Temperature - Calibration/Offset/ Highest
A user calibration to make sure the display shows the actual water heater temperature

Press and hold 1 and use ▽ DOWN △ UP to set the display to match the actual temperature. (+/-15° F)

Press and hold 2 to change the amount of the offset.(+/-15° F)

Press and hold 3 to view the highest air temperature recorded.

Press ▽ DOWN to reset highest temperature.

T13: Humidity - Circuit Calibration
See Humidity Sensor Calibration and Replacement Section

T14: Humidity Sensor - Calibration/Offset
A specific value that is sent with the humidity sensor, when necessary; otherwise, this value should be 0

2-2. TECH MODE (Continued)

T15: Humidity - Calibration/Offset/Highest
A user calibration to make sure the display shows the actual humidity inside the cabinet

Press and hold 1 and use ▽ DOWN △ UP to set the display to match the actual temperature. (+/-15° F)

Press and hold 2 to change the amount of the offset.(+/-15° F)

Press and hold 3 to view the highest air temperature recorded.

Press ▽ ▼ DOWN to reset highest temperature.

T16: CPU° - Control Temperature - Highest Value
Shows the highest temperature the control board was exposed to

T17: View ADC Channel
Factory use only

T18: Outputs/Inputs
The following components can be tested:

1 toggles the solenoid off and on.

2 toggles the cooling fan off and on.

3 toggles the water heater off and on.

4 toggles the air heaters off and on.

T19: Total Initialization
Completely resets any accumulated information and changed settings in the controls; contact Henny Penny Corp. before completing this step!

2-3. STATS MODE

Press PROG and hold until "L-2 LEVEL 2", followed by, "SP PROG", shows in display.

Press PROG 4 times and "STATS", followed by, "ENTER CODE" shows in display.

Enter code, 1 1 2 2 1 1 2 2 to access the following items:

ST-1 Power live hours
ST-2 Power on hours
ST-3 Power-ups count
ST-4 Errors count
ST-5 Air heat on hours
ST-6 Water heater on hours
ST-7 Circulation fan on hours
ST-8 Water solenoid on hours
ST-9 Solenoid cycle count
ST-10 Longest solenoid on time; maximum=5 minutes
ST-11 Highest air temperature
ST-12 Highest water heater temperature
ST-13 Highest humidity value
ST-14 Highest CPU temperature
ST-15 Water heater (too hot) cycle count
ST-16 Sys ram – Fade count
ST-17 Hold RAM – Fade count
ST-18 Stat RAM – Fade count
ST-19 Ram data error count
ST-20 Data total loss count
ST-21 User init's count
ST-22 Auto init's count
ST-23 Error log
ST-24 Power up log
ST-25 Heat up log
ST-26 Reset all stats

PROG moves you forward through the above selections and INFO moves you backwards through the selections.

2-3. STATS MODE (Continued)

ST-1: Power Live Hours
Shows the number of hours the unit has been plugged in

ST-2: Power On Hours
Shows the number of hours the control has been on

ST-3: Power Ups Count
Shows the number of times the control has been turned on

ST-4: Errors Count
Shows the total number of all errors (displayed on control) that have occurred with the unit

ST-5: Air Heat On Hours
Shows the number of hours the air heaters have been on

ST-6: Water Heater On Hours
Shows the number of hours the water heater has been on

ST-7: Circulation Fan On Hours
This section shows the number of hours the cooling fan has been on.

ST-8: Water Solenoid On Hours
Shows the number of hours the solenoid has been on

ST-9: Solenoid Cycle Count
Shows the number of times the solenoid has been turned on

ST-10: Longest Solenoid 'On' time. Maximum 5 minutes.
Shows the longest the solenoid has been on at any one time, to a maximum of 5 minutes

ST-11: Highest Air Temperature
Shows highest air temperature sensed by the temperature probe

ST-12: Highest Water Heater Temperature
Shows the highest water heater temperature, sensed by the water heater temperature sensor

2-3. STATS MODE (Continued)

ST-13: Highest Humidity Value
Shows the highest humidity value sensed by the humidity sensor

ST-14: Highest CPU Temperature
Shows the highest control board temperature sensed by the control

ST-15: Water heater (too hot) cycle count
Shows the number of times the water heater has gotten too hot

ST-16: System Ram - Fade Count
Shows the number of times the system memory has been lost during power up; ex: °F or °C, or speaker volume

ST-17: Hold Ram - Fade Count
Shows the number of times the hold memory has been lost during a power up; may be lost at a power up, after a power loss, during a holding cycle

ST-18: Stat Ram - Fade Count
This section shows the number of times the Stats memory has been lost during power up; the information in the Stats Mode is updated every two hours, and this count lets you know that the updates were lost

ST-19: Ram Data Error Count
Shows the number of times the data was lost while operating, not during power up (should be a low number)

ST-20: Data Total Loss Count
Shows the number of times the data stored in the Eprom has been lost; should see an "E-41" error code when this occurs

ST-21: User Init's Count
Shows the number of times the operator has initialized the controls

ST-22: Auto Init's Count
Shows the number of times the controls have automatically reset

ST-23: Error Log
Records the last 10 errors and the time they occurred; press

to view the log

2-3. STATS MODE (Continued)

ST-24: Power Up Log
Records the last 10 power ups and when they occurred; press

to view the log

ST-25: Heat Up Log
Records the last 10 heat ups between 250° F (121° C) to 300° F (149° C), when they occurred, and how long (seconds) it took; press

to view the log

ST-26: Resets All Stats
Allows the user to reset all data stored in the Stats Mode; press and hold

for 3 seconds

2-4. DATA LOGGING AND MANUFACTURING MODE

The Data Logging and Manufacturing Modes are mainly for Henny Penny use only. For more information on these modes, contact the Service Department at 1-800-417- 8405, or 1-937-456-8405.

SECTION 3. MAINTENANCE

3-1. INTRODUCTION

This section provides procedures for the checkout and replacement of the various parts used within the merchandiser. Before replacing any parts, refer to the Troubleshooting section. It will aid you in determining the cause of the malfunction.

3-2. MAINTENANCE HINTS

1. You may want to use a multimeter to check the electric components.
2. When the manual refers to the circuit being closed, the multimeter should read zero unless otherwise noted.
3. When the manual refers to the circuit being open, the multimeter reads infinity.

3-3. HUMIDITY SENSOR CALIBRATION AND REPLACEMENT

The Humidity Sensor relays the cabinet humidity to the controls. If it becomes faulty , "E-17", then "HUMIDITY SENSOR FAILED" shows on the display. Replace sensor as follows:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

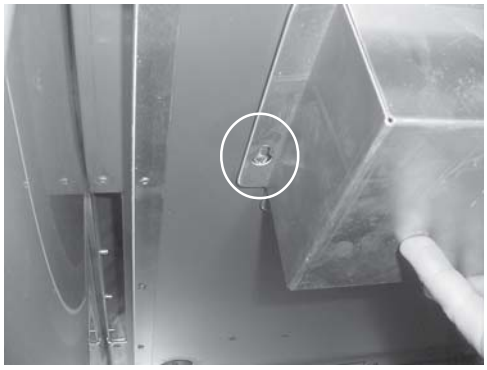


Figure 3-1

Figure 3-2

Replacement:

1. Open top, operator side door of full-size units, or operator door of 1/2 size units.
2. Using a Phillip's head screwdriver, remove the front screw and loosen the 2 side screws securing the sensor cover. Slide cover towards you and off loosened screws. Figure 3-1
3. Using a Phillip's head screwdriver, remove the 4 screws securing the sensor to the box. Figure 3-2.

3-3. HUMIDITY SENSOR CALIBRATION AND REPLACEMENT (Continued)

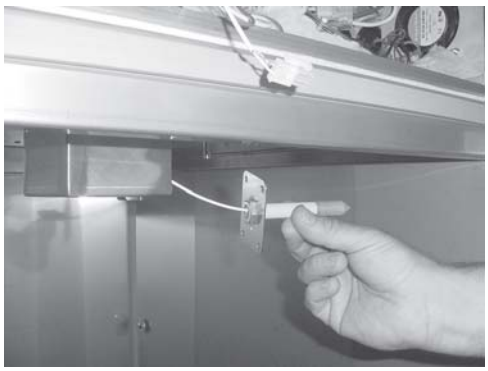


Figure 3-3

4. Pull the sensor assembly from the box and disconnect the wires. Figure 3-3.

5. Connect wires of new sensor and attach the sensor to the box. Follow the calibration instructions below before re-attaching the sensor cover.

6. Once the calibration is complete, slide the cover over the Phillip's head screws and tighten. Unit is now ready for use.

Calibration:

Calibrate the humidity sensor after a sensor or control replacement. A calibration board is supplied with each control kit and humidity sensor kit, but can also be ordered separately with part number, 14391.

1. If not already done, open the cabinet door, and remove the humidity sensor cover at top of unit. (See step 2, page 3-1.)

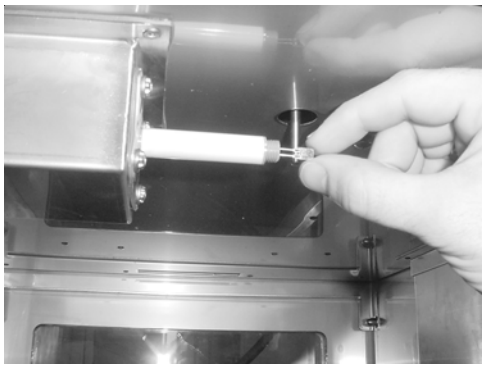


Figure 3-4

2. While holding the white tube, unscrew the silver cap from the humidity sensor.

3. Remove the two pronged sensor by grasping the edges. Figure 3-4.

NOTICE

Use caution not to touch the flat edge, as it will throw the reading off.

4. Push and hold PROG until "Level 2" appears in display.

5. Press PROG to step through the menu until "TECH' is displayed.

3-3. HUMIDITY SENSOR CALIBRATION AND REPLACEMENT (Continued)

6. Using the hidden buttons, (Figure 3-5), enter code of 11221122. (Hidden buttons 1 through 5 left to right)

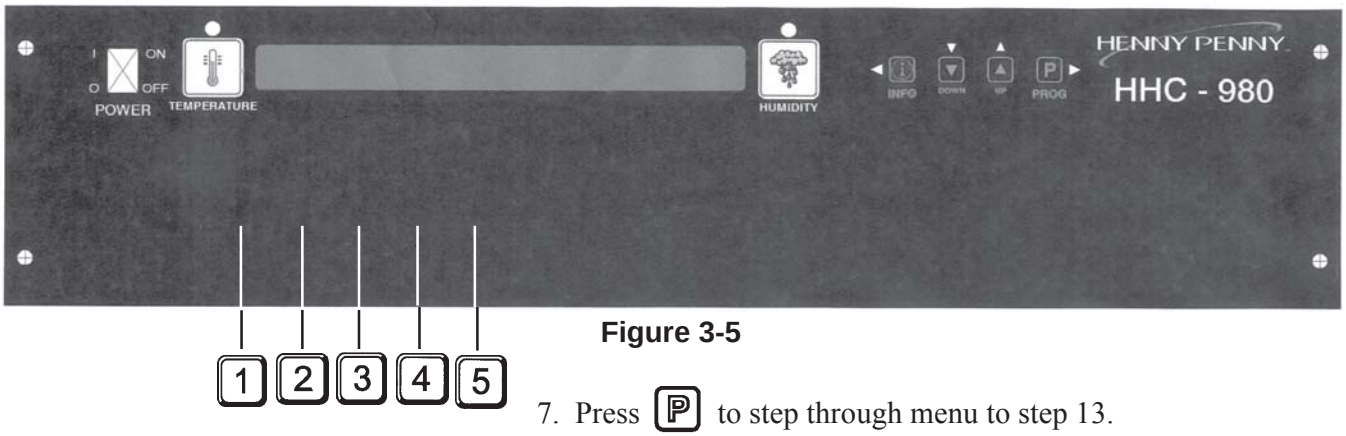


Figure 3-5

7. Press (P) PROG to step through menu to step 13.
8. Insert the two prongs of the calibration board marked 20% into the humidity sensor. Figure 3-6.

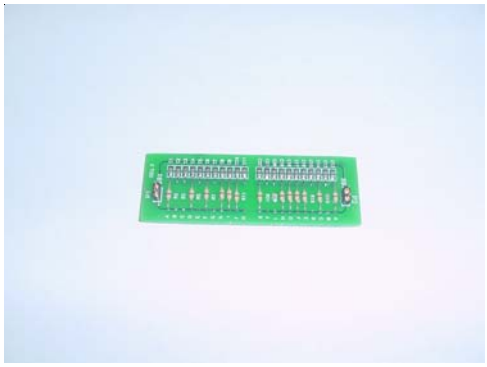


Figure 3-6

9. Press and hold the hidden button 1, then press ▽ DOWN. Release both buttons. 20% should then show in display.
10. Reverse calibration board and insert the two prongs marked 80% into humidity sensor.
11. Push and hold the hidden button 2 then press ▽ DOWN. Release both buttons. 80% should then show in display.
12. Push the (P) button to step 14 on models 983 & 980, or to step 16 on models 993, 990, 996, & 998.
13. Find the offset number on the mounting plate of the humidity sensor.

NOTICE

When changing the control board on units with serial number IV178JB and below, no offset will be found. Leave offset at 0.

14. Push and hold the hidden button “2”, then push the UP or DOWN arrows to enter the offset number.
12. Press and hold (P) PROG to exit TECH mode.
13. Reinstall two pronged sensor into humidity sensor.
14. Reinstall silver cap and sensor cover, and unit is now ready for use.

3-4. FUSE AND FUSE HOLDER ASSEMBLY

If the unit (non-CE) is completely inoperative, but power exists at the wall receptacle, check the 15 amp fuse(s) and fuse holder(s) as follows:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

Figure 3-7

Checking Fuse(s)

1. Unscrew the fuse holder cap by turning it counterclockwise. (Located under the power cord.) Figure 3-7.

2. Pull the fuse from the cap and check for continuity by placing the leads of a multimeter or continuity light on opposite ends of the fuse. The fuse should show closed or read no resistance. If fuse is defective, replace it with a new one. Be sure replacement fuse is identical to the one being replaced. (208 or 240 volt units have 2 fuses and both should be checked.)

Checking Fuse Holder(s)

If fuses show good, the fuse holders may be bad. Check the fuse holders as follows:

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

Figure 3-8

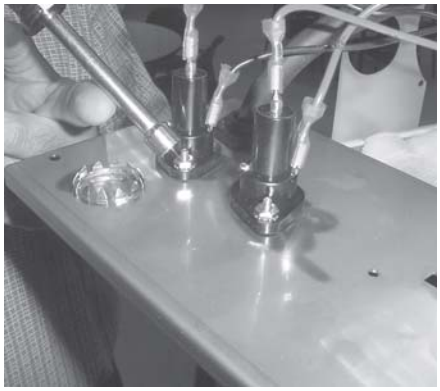


Figure 3-9

1. Remove the screws securing the rear access panel and pull panel down.

2. Remove the wires from the fuse holder, and check for continuity by placing the leads of a multimeter or continuity light on terminals of the fuse holder. The fuse holder should show closed or read no resistance. Figure 3-8.

3. If fuse holder shows it's defective, remove the screws securing it to the panel and replace it with a new one. Figure 3-9.

4. Reinstall the rear panel and make sure the fuse holder has a 15 amp fuse in it.

5. Restore power to the cabinet and it's now ready for use.

3-5. POWER SWITCH REPLACEMENT

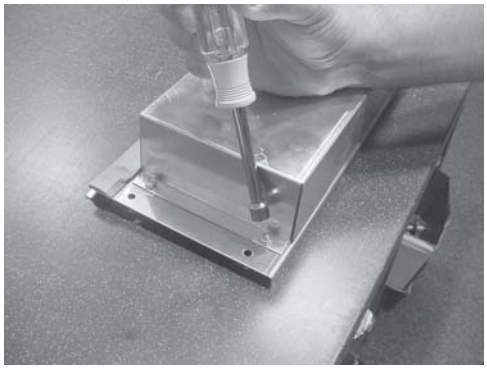


Figure 3-10

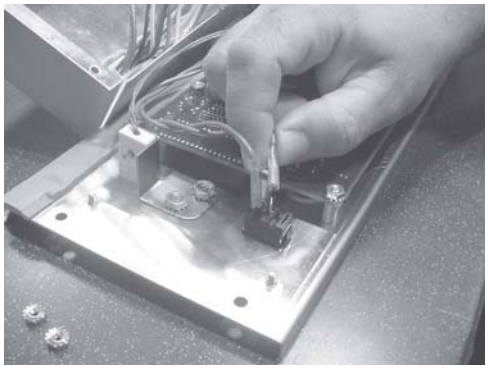


Figure 3-11

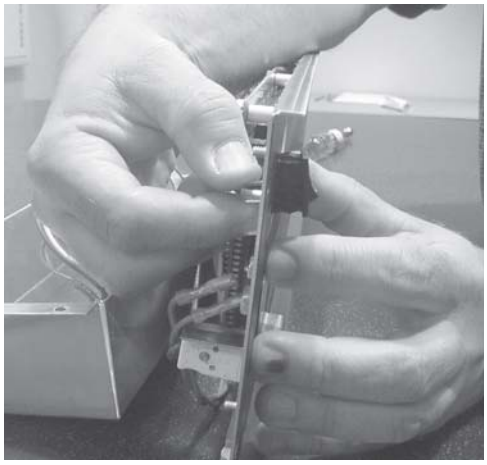


Figure 3-12

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Using a Phillip's head screwdriver, remove the four screws securing the front panel.

2. Pull panel down, pull connectors from the back of it, and remove panel from unit.

3. Using 5/16" socket, remove the 4 nuts securing the control cover and remove cover. Figure 3-10.

4. Pull wires from switch and check across the 2 terminals for continuity. Figure 3-11. With switch in ON position, the circuit should be closed. In the OFF position the circuit should be open. If the switch is defective, continue with step 5.

5. Pinch the tabs on the rear of the switch and pull the switch through the front of the panel. Figure 3-12.

6. Replace with new switch in reverse order and unit is now ready for use.

3-6. AIR TEMPERATURE PROBE REPLACEMENT

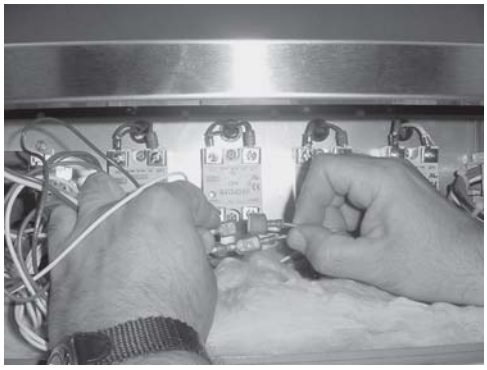


Figure 3-13

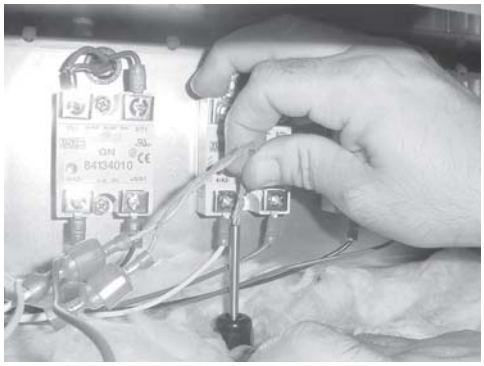


Figure 3-14

Figure 3-15

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Using a Phillip's head screwdriver, remove the four screws securing the front panel.

2. Pull panel down, pull connectors from the back of it, and remove panel from unit.

3. Unplug the wires to the probe. Figure 3-13.

4. Using a multimeter, or ohmmeter, check across the probe terminals for the correct ohms using the RTD Resistance Chart on the following page. If the probe proves faulty, continue onto step 5.

5. Using a 3/4" wrench, loosen probe strain relief and pull the probe from the unit. Figure 3-14.

6. Slide new probe through the strain relief, extending the probe about 1" (25.4 mm) into the cabinet area. Figure 3-15.

7. Plug probe wires to the unit, tighten the strain relief, and replace front panel. Unit is now ready for use.

RTD Resistance Chart

Temp. F	Temp. C	Resistance Ohms
32	0.00	1000.00
33	0.56	1002.17
34	1.11	1004.34
35	1.67	1006.51
36	2.22	1008.68
37	2.78	1010.85
38	3.33	1013.02
39	3.89	1015.18
40	4.44	1017.35
41	5.00	1019.52
42	5.56	1021.69
43	6.11	1023.86
44	6.67	1026.02
45	7.22	1028.19
46	7.78	1030.36
47	8.33	1032.52
48	8.89	1034.69
49	9.44	1036.85
50	10.00	1039.02
51	10.56	1041.18
52	11.11	1043.35
53	11.67	1045.51
54	12.22	1047.67
55	12.78	1049.84
56	13.33	1052.00
57	13.89	1054.16
58	14.44	1056.32
59	15.00	1058.49
60	15.56	1060.65
61	16.11	1062.81
62	16.67	1064.97
63	17.22	1067.13
64	17.78	1069.29
65	18.33	1071.45
66	18.89	1073.61
67	19.44	1075.77
68	20.00	1077.92
69	20.56	1080.08
70	21.11	1082.24
71	21.67	1084.40
72	22.22	1086.55
73	22.78	1088.71
74	23.33	1090.87
75	23.89	1093.02
76	24.44	1095.18
25.00	1097.33	
78	25.56	1099.49
79	26.11	1101.64
80	26.67	1103.80
81	27.22	1105.95
82	27.78	1108.10
83	28.33	1110.26
84	28.89	1112.41
85	29.44	1114.56
86	30.00	1116.72
87	30.56	1118.87
88	31.11	1121.02
89	31.67	1123.17
90	32.22	1125.32
91	32.78	1127.47
92	33.33	1129.62
93	33.89	1131.77
94	34.44	1133.92
95	35.00	1136.07
96	35.56	1138.22
97	36.11	1140.36
98	36.67	1142.51
99	37.22	1144.66
100	37.78	1146.81
101	38.33	1148.95
102	38.89	1151.10
103	39.44	1153.24
104	40.00	1155.39
105	40.56	1157.53
106	41.11	1159.68
107	41.67	1161.82
108	42.22	1163.97
109	42.78	1166.11
110	43.33	1168.26
111	43.89	1170.40
112	44.44	1172.54
113	45.00	1174.68
114	45.56	1176.83
115	46.11	1178.97
116	46.67	1181.11
117	47.22	1183.25
118	47.78	1185.39
119	48.33	1187.53
120 77	48.89	1189.67
121	49.44	1191.81
122	50.00	1193.95
123	50.56	1196.09
124	51.11	1198.23
125	51.67	1200.36
126	52.22	1202.50
127	52.78	1204.64
128	53.33	1206.78
129	53.89	1208.91
130	54.44	1211.05
131	55.00	1213.18
132	55.56	1215.32
133	56.11	1217.45
134	56.67	1219.59
135	57.22	1221.72
136	57.78	1223.86
137	58.33	1225.99
138	58.89	1228.12
139	59.44	1230.26
140	60.00	1232.39
141	60.56	1234.52
142	61.11	1236.65
143	61.67	1238.79
144	62.22	1240.92
145	62.78	1243.05
146	63.33	1245.18
147	63.89	1247.31
148	64.44	1249.44
149	65.00	1251.57
150	65.56	1253.70
151	66.11	1255.83
152	66.67	1257.95
153	67.22	1260.08
154	67.78	1262.21
155	68.33	1264.34
156	68.89	1266.46
157	69.44	1268.59
158	70.00	1270.72
159	70.56	1272.84
160	71.11	1274.97
161	71.67	1277.09
162	72.22	1279.22
163	72.78	1281.34
164	73.33	1283.47
165	73.89	1285.59
166	74.44	1287.71
167	75.00	1289.84
168	75.56	1291.96
169	76.11	1294.08
170	76.67	1296.20
171	77.22	1298.32
172	77.78	1300.45
173	78.33	1302.57
174	78.89	1304.69
175	79.44	1306.81
176	80.00	1308.93
177	80.56	1311.05
178	81.11	1313.17
179	81.67	1315.28
180	82.22	1317.40
181	82.78	1319.52
182	83.33	1321.64
183	83.89	1323.76
184	84.44	1325.87
185	85.00	1327.99
186	85.56	1330.10
187	86.11	1332.22
188	86.67	1334.34
189	87.22	1336.45
190	87.78	1338.57
191	88.33	1340.68
192	88.89	1342.79
193	89.44	1344.91
194	90.00	1347.02
195	90.56	1349.13
196	91.11	1351.25
197	91.67	1353.36
198	92.22	1355.47
199	92.78	1357.58
200	93.33	1359.69
201	93.89	1361.80
202	94.44	1363.91
203	95.00	1366.02
204	95.56	1368.13
205	96.11	1370.24
206	96.67	1372.35
207	97.22	1374.46
208	97.78	1376.57
209	98.33	1378.68
210	98.89	1380.79
211	99.44	1382.89
212	100.00	1385.00
213	100.56	1387.11
214	101.11	1389.21
215	101.67	1391.32
216	102.22	1393.42
217	102.78	1395.53
218	103.33	1397.63
219	103.89	1399.74
220	104.44	1401.84
221	105.00	1403.95
222	105.56	1406.05
223	106.11	1408.15
224	106.67	1410.25
225	107.22	1412.36
226	107.78	1414.46
227	108.33	1416.56
228	108.89	1418.66
229	109.44	1420.76
230	110.00	1422.86
231	110.56	1424.96
232	111.11	1427.06
233	111.67	1429.16
234	112.22	1431.26
235	112.78	1433.36
236	113.33	1435.46
237	113.89	1437.55
238	114.44	1439.65
239	115.00	1441.75
240	115.56	1443.85
241	116.11	1445.94
242	116.67	1448.04
243	117.22	1450.13
244	117.78	1452.23
245	118.33	1454.32
246	118.89	1456.42
247	119.44	1458.51
248	120.00	1460.61
249	120.56	1462.70
250	121.11	1464.79

3-7. TRANSFORMER REPLACEMENT

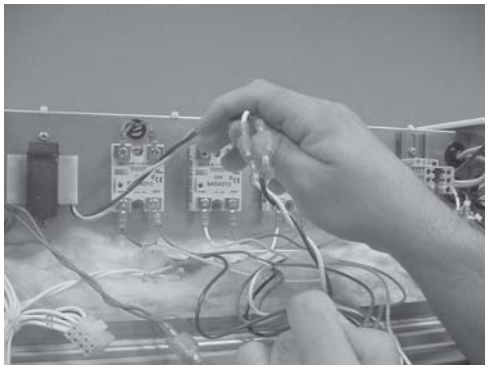


Figure 3-16

Figure 3-17

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Using a Phillip's head screwdriver, remove the four screws securing the front panel.

2. Pull panel down, pull connectors from the back of it, and remove panel from unit.

3. Label wires to transformer and unplug wires to transformer. Figure 3-16.

4. Using a Phillip's head screwdriver, remove the 2 screws securing the transformer and pull transformer from unit. Figure 3-17.

5. Install new transformer in reverse order and unit is now ready for use.

3-8. RELAY REPLACEMENT

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

Checkout:

1. Using a Phillip's head screwdriver, remove the four screws securing the front panel.

2. Pull panel down, pull connectors from the back of it, and remove panel from unit.

The following checks are performed with the wall circuit breaker closed and the main power switch in the ON position. Extreme caution should be taken. Make connections before applying power, take reading, and remove power before removing meter leads, or electrical shock could result.

3. With power reapplied, let unit start heating up, or enter the Tech Mode in Special Program Mode and check the relays in the output test. (See T-18 in the Tech Mode Section)

4. With the component energized (example: air heaters), 0 volts should show on the output side of the relay, and 12 volts on the input side.

5. With the component not energized, 208 or 240 volts should show on the output side of relay, and 0 volts on input.

6. If voltage varies from steps 4 and 5, remove power to unit, pull input wires from relay and place leads of meter onto input wires. Reapply power to unit. When unit is running, the input wires to relay should show 12 vdc volts. If this proves true, the relay is faulty and continue onto step 7.

3-8. RELAY REPLACEMENT (Continued)

Figure 3-18

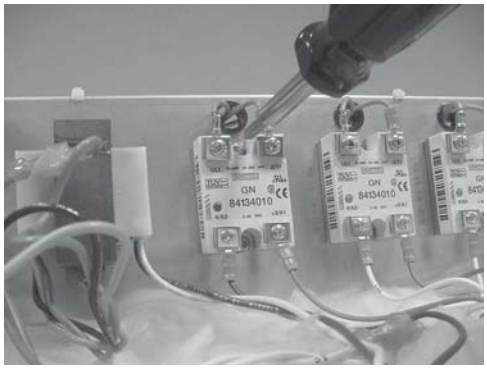


Figure 3-19

7. Label wires and then remove wires from relay using a Phillip's head screwdriver. Figure 3-18.

8. Using a Phillip's head screwdriver, remove the 2 screws securing the relay and remove relay from unit. Figure 3-19.

9. Coat the back of the relay with the thermal joint compound.

CAUTION

Failure to use the thermal joint compound will shorten the life of the relay.

10. Install new relay in reverse order and unit is now ready for use.

3-9. MODULE TOP REMOVAL

Figure 3-20

Figure 3-21

WARNING
SHOCK HAZARD

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Using a Phillip's head screwdriver, remove the module screws from the side. Figure 3-20.

2. Remove screws from front and rear panels.

3. Pull module top from module. Figure 3-21.

3-10. COOLING FAN REPLACEMENT

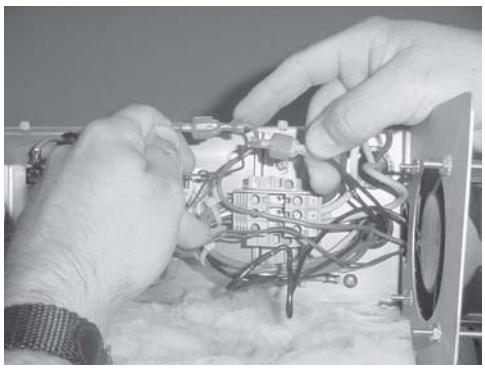


Figure 3-22

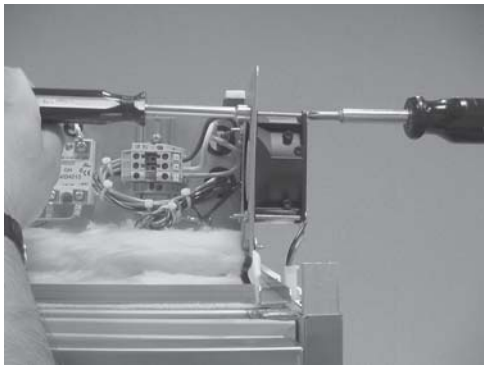


Figure 3-23

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Refer to section 3-10 for module top removal.
2. Unplug connectors to the cooling fan. Figure 3-22.
3. Remove screws and nuts securing the fan and remove fan from module. Figure 3-23.
4. Install new fan in reverse order and unit is now ready for use.

3-11. HIGH LIMIT-AIR HEATER REPLACEMENT

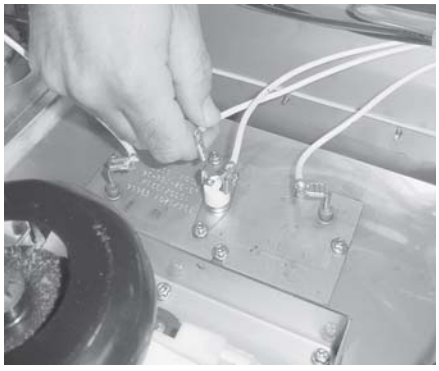


Figure 3-24

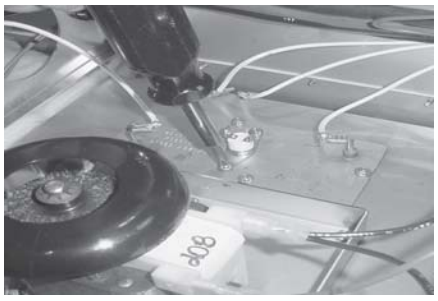


Figure 3-25

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Follow the instructions in section 3-10 on removing the module top.
2. Remove wires from high limit. Figure 3-24.
3. Check across the terminals for continuity. If the unit is not heating, the circuit should be closed, or read no resistance. If high limit is defective, continue onto step 4.
4. Remove the 2 screws securing the high limit and remove high limit. Figure 3-25.
5. Install new high limit in reverse order and unit is now ready for use.

3-12. BLOWER MOTOR REPLACEMENT

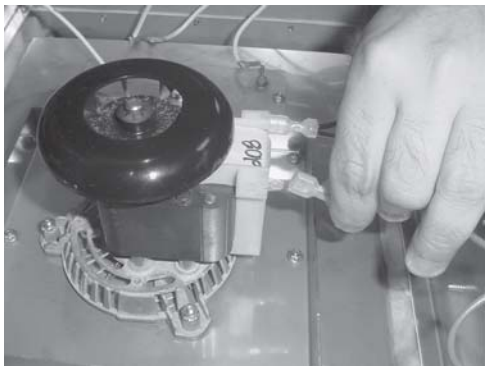


Figure 3-26

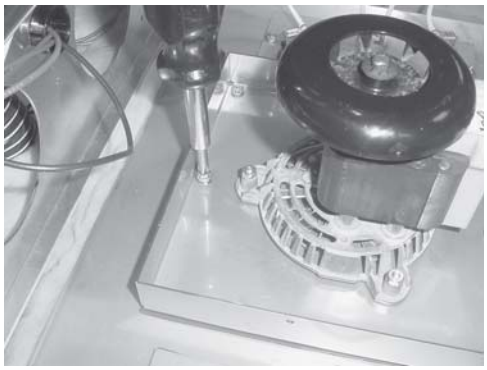


Figure 3-27

Figure 3-28

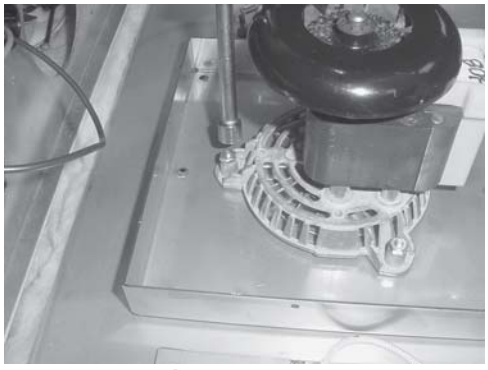


Figure 3-29

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Follow the instructions in section 3-10 on removing the module top.

2. Unplug wires to blower motor. Figure 3-26.

3. Using a Phillip's head screwdriver, remove the screws securing the blower bracket to the module. Figure 3-27.

4. Pull bracket from module. Loosen set screw on fan blade and pull blade from blower. Figure 3-28.

5. Remove the 3 nuts securing the blower to the bracket and remove blower motor. Figure 3-29.

6. Install new blower in reverse order, and unit is now ready for use.

3-13. AIR HEATER REPLACEMENT

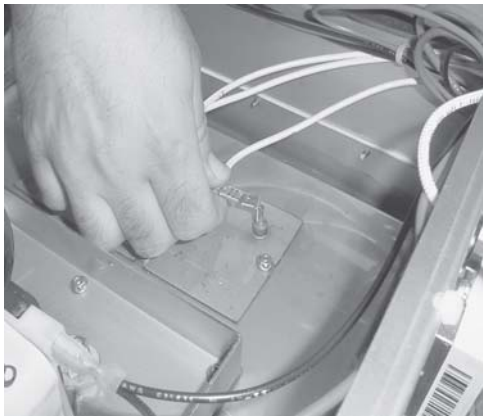


Figure 3-30

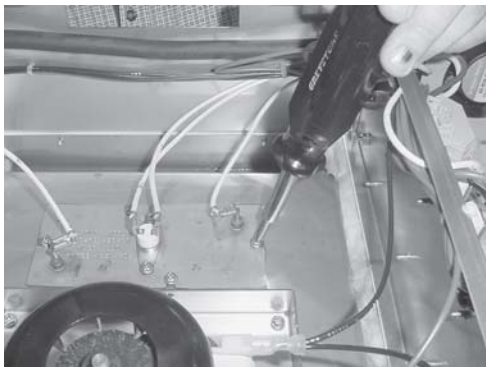


Figure 3-31

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Follow the instructions in section 3-10 on removing the module top.
2. Unplug the wires to the heater and high limit. Figure 3-30.
3. Using a Phillip's head screwdriver, remove the 4 screws securing the heater and remove heater. Figure 3-31.
4. Install new heater in reverse order and unit is now ready for use.

3-14. SPEAKER REPLACEMENT

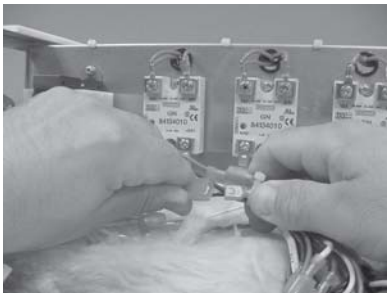


Figure 3-32

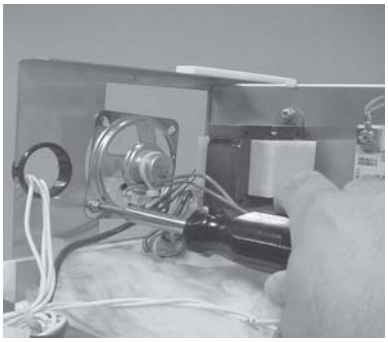


Figure 3-33

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Remove the 4 screws securing the front panel.
2. Pull connectors from back of panel and remove panel.
3. Unplug wires to speaker. Figure 3-32.
4. Using a Phillip's head screwdriver, remove the screws securing the speaker and remove speaker. Figure 3-33.
5. Install new speaker in reverse order and unit is now ready for use.

3-15. COMPLETE PANEL OR PC BOARD REPLACEMENT

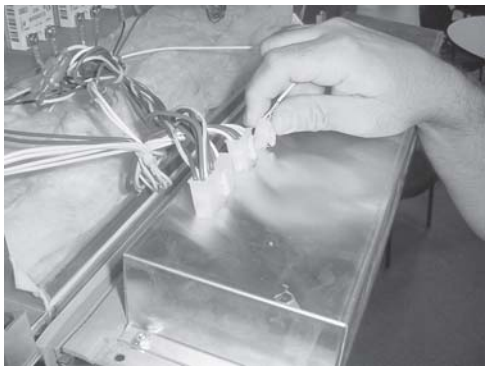


Figure 3-34

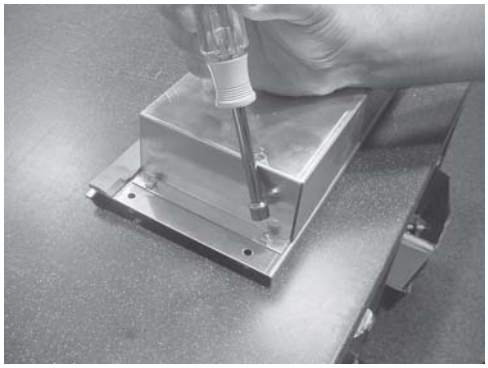


Figure 3-35

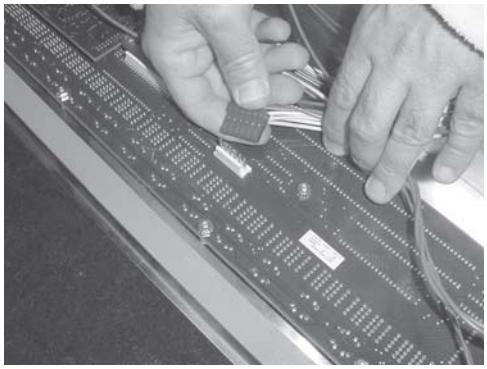


Figure 3-36

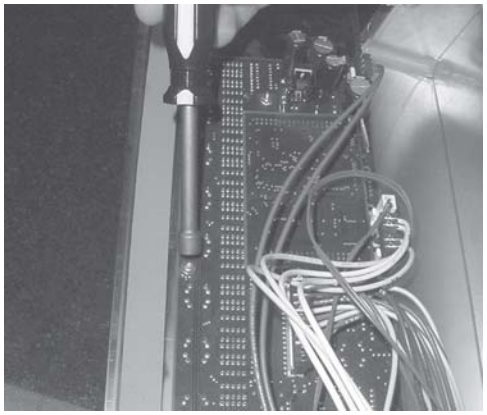


Figure 3-37

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

The complete control panel assembly can be replaced, or just the PC board. Follow steps 1 & 2 for the complete panel and continue with the remaining steps for the PC Board replacement.

1. Remove the 4 screws securing the front panel.

2. Pull connectors from back of panel and remove panel. Figure 3-34 Install complete panel in reverse order. When installing the PC board, continue to step 3.

3. Using 5/16” socket, remove the 4 nuts securing the control cover and remove cover. Figure 3-35.

4. Pull the connectors from PC Board. Figure 3-36.

5. Using 5/16” socket, remove the 8 nuts securing the PC board and remove board. Figure 3-37.

6. Install new PC board in reverse order and unit is now ready for use.

3-16. FLOAT SWITCH REPLACEMENT

Figure 3-38

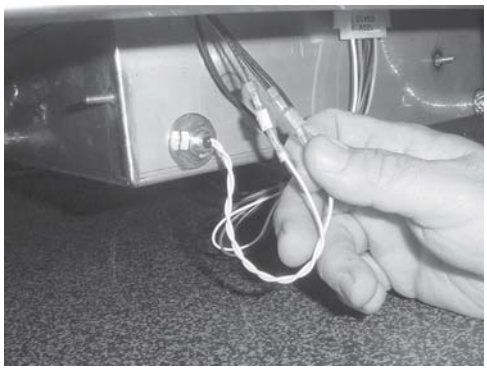


Figure 3-39

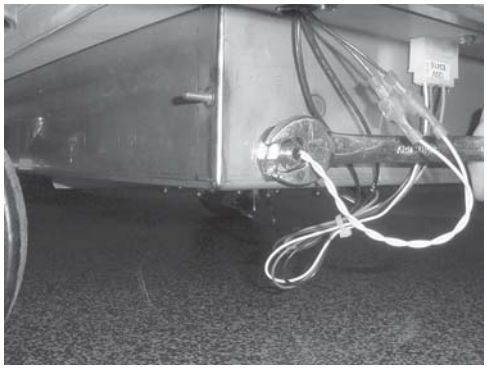


Figure 3-40

Figure 3-41

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Disconnect water supply at side of cabinet. Open drain valve and empty water pan into a shallow pan or floor drain. Figure 3-38.

Hot water! Do not place your hand under the drain while draining the unit. Failure to follow this warning could result in severe burns and injury.

2. Unplug wires to float switch. Figure 3-39.

3. Remove nut securing the float switch and pull float switch from unit. Figure 3-40.

4. Install new float switch in reverse order, making sure float switch is in upright position. Figure 3-41.

5. Reconnect water supply and unit is now ready for use..

3-17. HIGH LIMIT - WATER HEATER REPLACEMENT

Figure 3-42

Figure 3-43

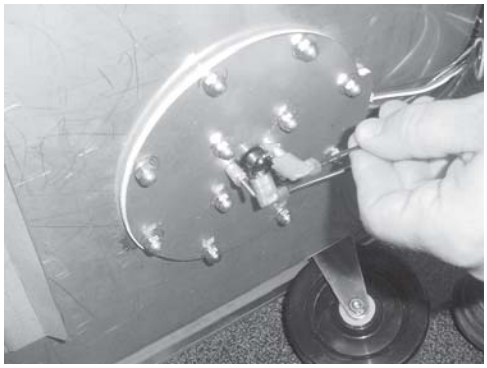


Figure 3-44

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Disconnect water supply at side of cabinet. Open drain valve and empty water pan into a shallow pan or floor drain. Figure 3-42.

Hot water! Do not place your hand under the drain while draining the unit. Failure to follow this warning could result in severe burns and injury.

2. Remove all doors and racks from unit and carefully lay the unit on its back. (This step may not be necessary for units on stands.)

3. Using an 11/32” socket or wrench, remove the nuts securing the water heater cover and remove cover. Figure 3-43.

4. Remove wire from high limit. Figure 3-44.

5. Check across the terminals for continuity. If the unit is not heating, the circuit should be closed, or read no resistance. If high limit is defective, continue onto step 6.

6. Remove the 2 nuts securing the high limit and remove high limit.

7. Install new high limit in reverse order.

8. Reconnect water supply and unit is now ready for use.

3-18. WATER HEATER REPLACEMENT

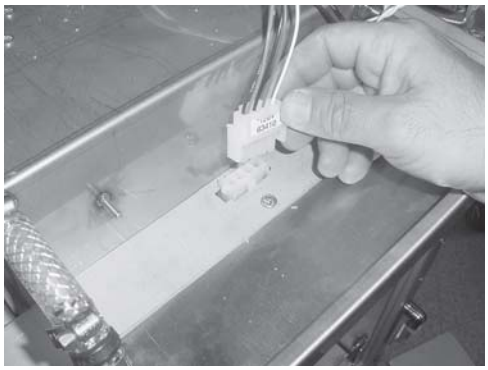


Figure 3-45

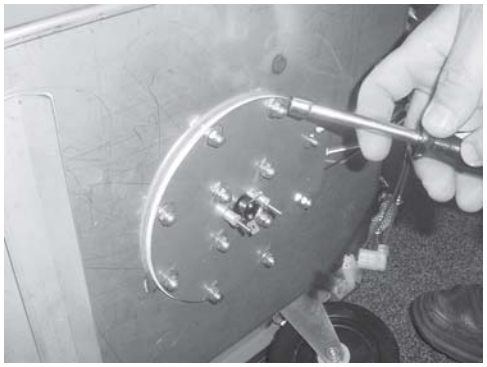


Figure 3-46

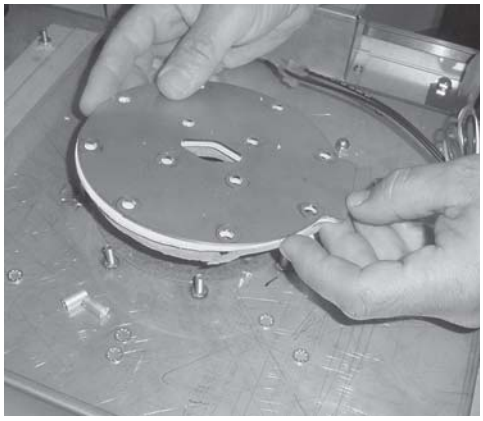


Figure 3-47

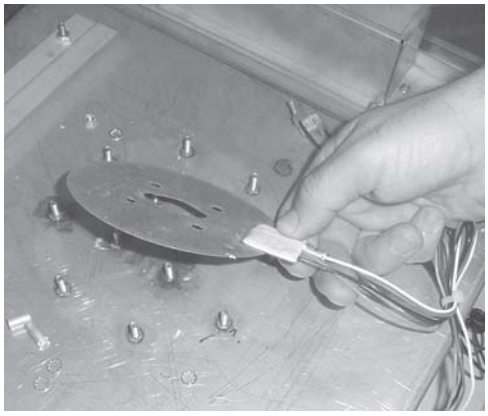


Figure 3-48

To avoid electrical shock or property damage, move the POWER switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Open drain valve and empty water pan into a shallow pan or floor drain. (See Figure 3-42 on page 3-16.)

Hot water! Do not place your hand under the drain while draining the unit. Failure to follow this warning could result in severe burns and injury.

2. Remove all doors and racks from unit and carefully lay the unit on its back. (This step may not be necessary for units on stands.)

3. Using an 11/32" socket or wrench, remove the nuts securing the water heater cover and remove cover (See Figure 3-43 on page 3-16.)

4. Unplug water heater and high limit wires. Figure 3-45.

5. Remove the nuts securing the water heater plate and high limit, and pull high limit, plate, insulation and water pan heater from the unit. Figure 3-46.

6. Pull plate and insulation from unit and discard plate and insulation. Figure 3-47.

7. Pull water heater from unit. Figure 3-48.

3-18. WATER HEATER REPLACEMENT (Continued)

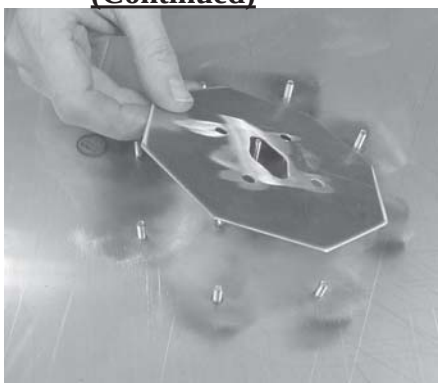


Figure 3-49

Figure 3-50

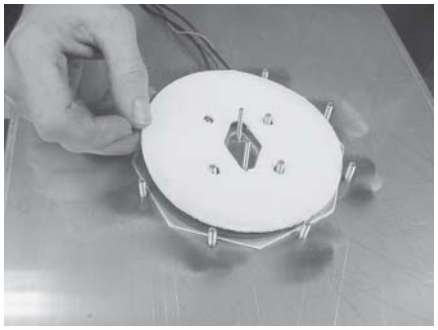


Figure 3-51

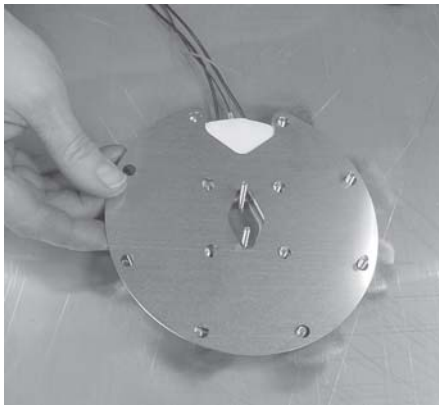


Figure 3-52

8. Locate the aluminum, octagon plate in the kit. Make sure the surface is free of debris and place the plate over the 4 long studs. Figure 3-49.

9. Install new heater, making sure the flat side is towards the plate and the soldered wires are exposed, as shown in Figure 3-50.

10. Install the new insulation from the kit, over the water pan heater Figure 3-51.

11. Place new cover plate from the kit, over the insulation. Figure 3-52.

12. Locate the 12 keps nuts from the kit and place them over the studs and finger-tighten. Using an 11/32" socket or wrench, snug the nuts down in a cross-fashion, but DO NOT overtighten.

CAUTION

Overtightening the nuts could damage the coating on the heater causing the heater to fail prematurely

13. Reinstall high limit.

14. Reconnect high limit wires and water pan heater wires to unit.

15. Reinstall water heater cover and water supplyand unit is now ready for use.

3-19. DRAIN VALVE REPLACEMENT

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Disconnect water supply at side of cabinet. Open drain valve and empty water pan into a shallow pan or floor drain. (See Figure 3-42 on page 3-16.)

Hot water! Do not place your hand under the drain while draining the unit. Failure to follow this warning could result in severe burns and injury.

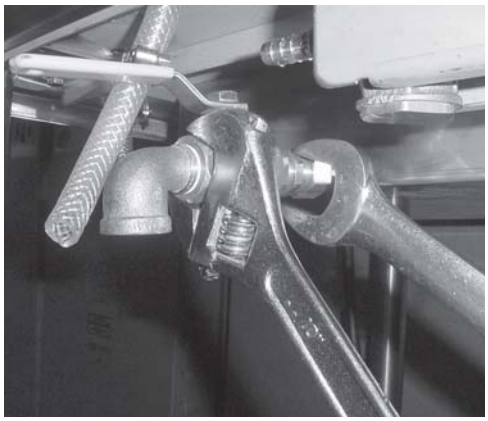


Figure 3-49

2. Remove all doors and racks from unit and carefully lay the unit on its back. (This step may not be necessary for units on stands.)

3. Loosen hose clamp on water hose and pull hose from water strainer.

4. Turn drain valve handle to open position (pointed outwards).

5. Using 2 wrenches, turn drain valve counterclockwise, while holding fitting behind it. Figure 3-49. Remove drain valve assembly from unit.

6. Remove elbow from valve.

7. Put pipe sealant on threads of elbow and install elbow in new drain valve.

8. Put pipe sealant on threads of fitting, and install new drain valve assembly onto fitting.

9. Reconnect water supply and unit is now ready for use.

3-20. CLEANING WATER STRAINER (Auto-fill units)

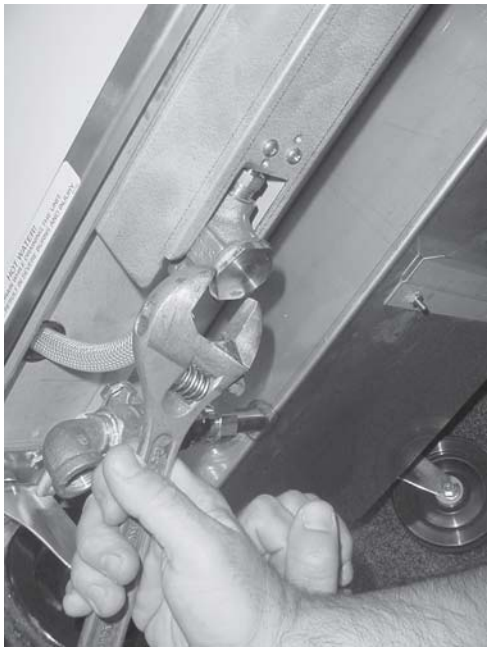


Figure 3-50

1. Disconnect water supply at side of cabinet.
2. Remove the hex cap at the bottom of the water strainer. Figure 3-50.
3. Remove the screen from inside the strainer and clean. Figure 3-51. If lime has built up on the strainer, clean with lime remover.

Figure 3-51

4. Reassemble in reverse order.
5. Reconnect water supply and check for leaks. If no leaks are found, unit is now ready for use.

3-21. WATER VALVE (SOLENOID) REPLACEMENT (Auto-fill units)

To avoid electrical shock or property damage, move the power switch to OFF and disconnect main circuit breaker, or unplug cord at wall receptacle.

1. Disconnect water supply at side of cabinet. Open drain valve and empty water pan into a shallow pan or floor drain. (See Figure 3-42 on page 3-16.)

3-21. WATER VALVE (SOLENOID) REPLACEMENT (Auto-fill units) (Continued)

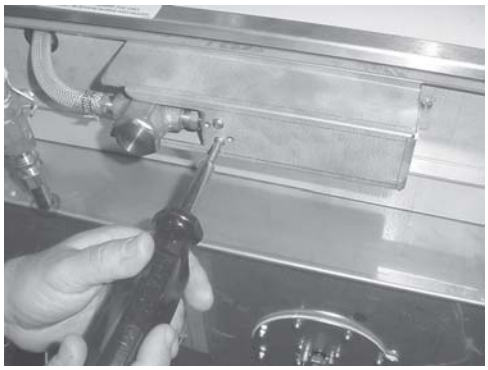


Figure 3-52

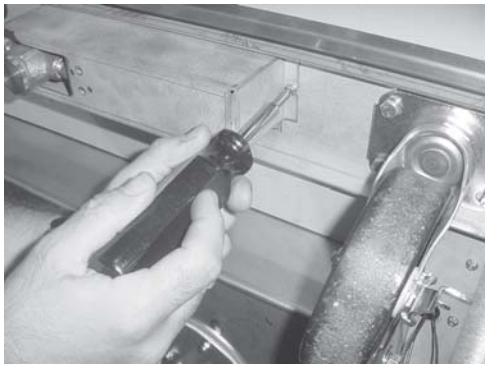


Figure 3-53

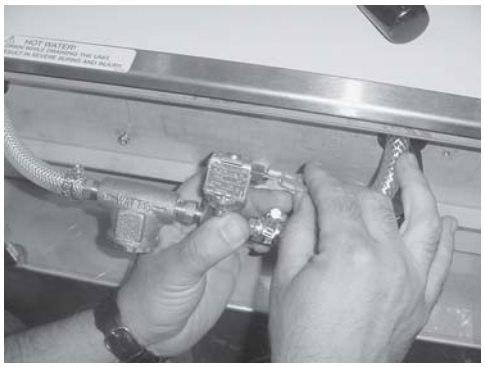


Figure 3-54

Figure 3-55

Hot water! Do not place your hand under the drain while draining the unit. Failure to follow this warning could result in severe burns and injury.

2. Remove all doors and racks from unit and carefully lay the unit on its back. (This step may not be necessary for units on stands.)

3. Using a Phillip's head screwdriver, remove the screws securing the solenoid to the cover. Figure 3-52.

4. Using a Phillip's head screwdriver, remove the screws securing the cover and remove cover. Figure 3-53.

5. Unplug the wires to the solenoid. Figure 3-54.

6. Loosen hose clamps and pull hoses from solenoid and the strainer. Figure 3-55.

3-21. WATER VALVE (SOLENOID) REPLACEMENT (Auto-fill units) (Continued)

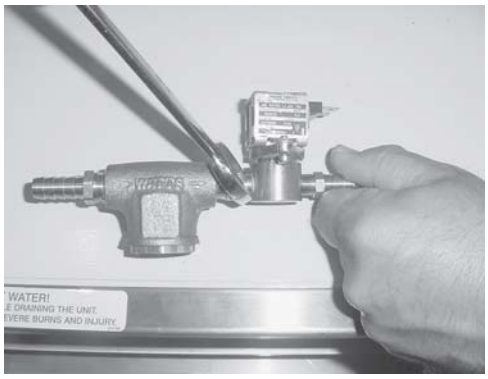


Figure 3-56

7. Remove the fittings from both ends of the solenoid. Figure 3-56.

8. Put pipe sealant on threads and place fittings in new solenoid, making sure the strainer goes to the IN side of the solenoid. Figure 3-57, below.

9. Reinstall assembly in reverse order.

10. Reconnect water supply and check for leaks. If no leaks are found, unit is now ready for use.

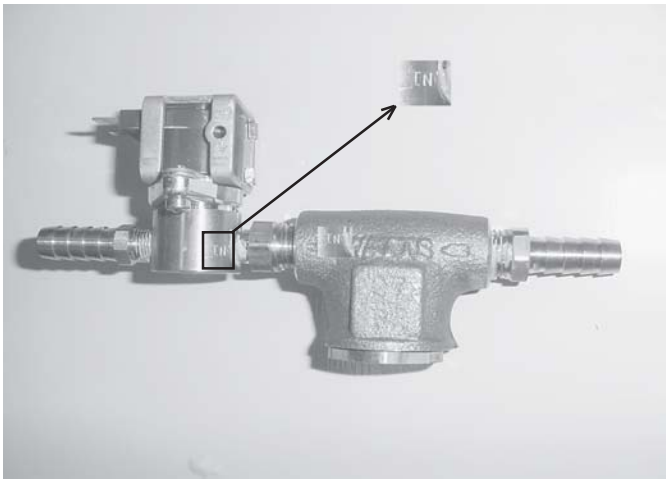


Figure 3-57

3-22. DOOR GASKET REPLACEMENT

Figure 3-58

1. Pull the gasket to the side to expose the retainer screws. Figure 5-58.

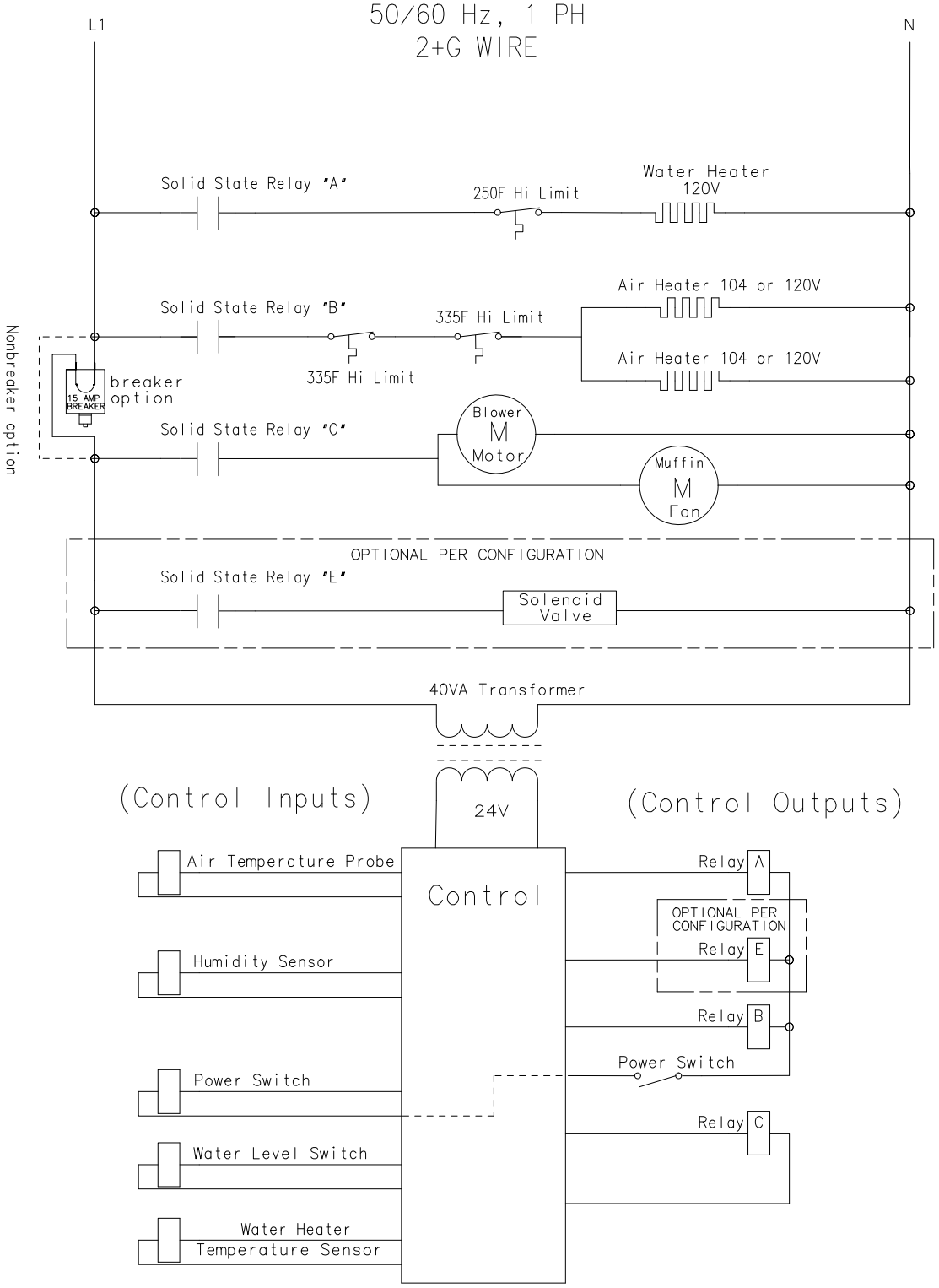
2. Loosen the screws around the outside perimeter of the gasket.

3. With all the screws loose, the gasket should slide out from under the retainers.

4. Install new gasket in reverse order and unit is now ready for use.

HENNY PENNY Global Foodservice Solutions

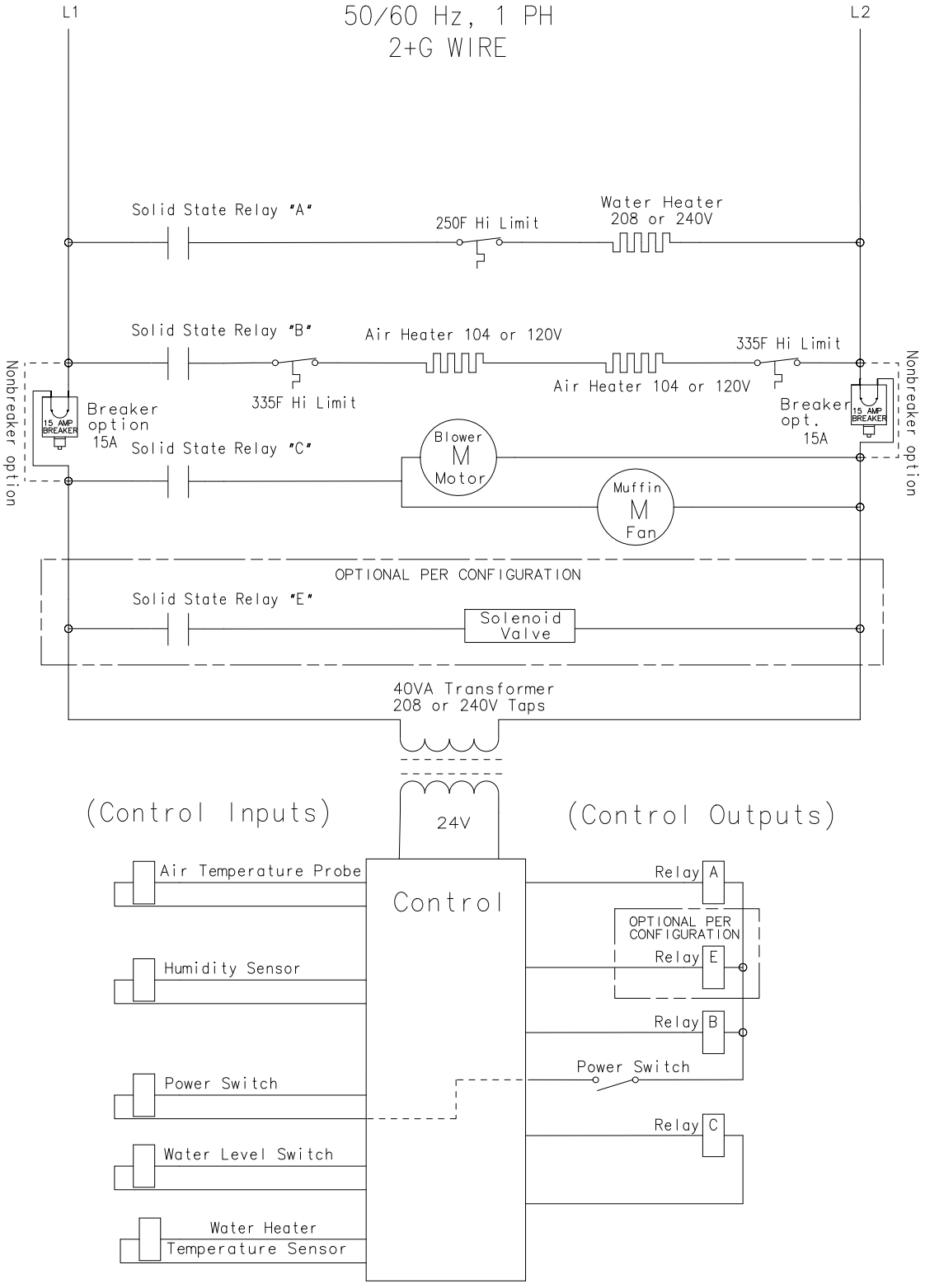
MODEL HHC980/983
100/120V
50/60 Hz, 1 PH
2+G WIRE



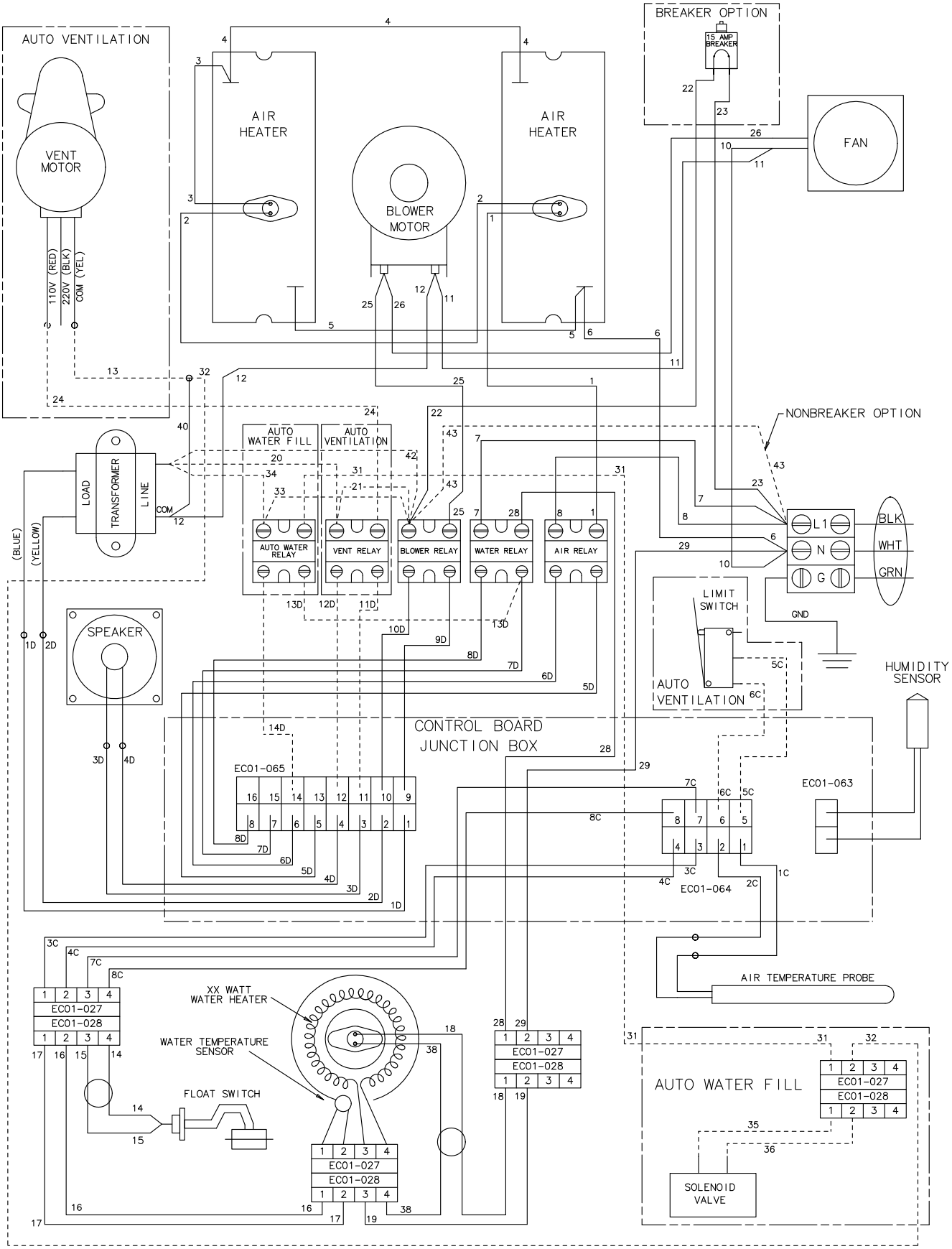
26984

HENNY PENNY™ Global Foodservice Solutions

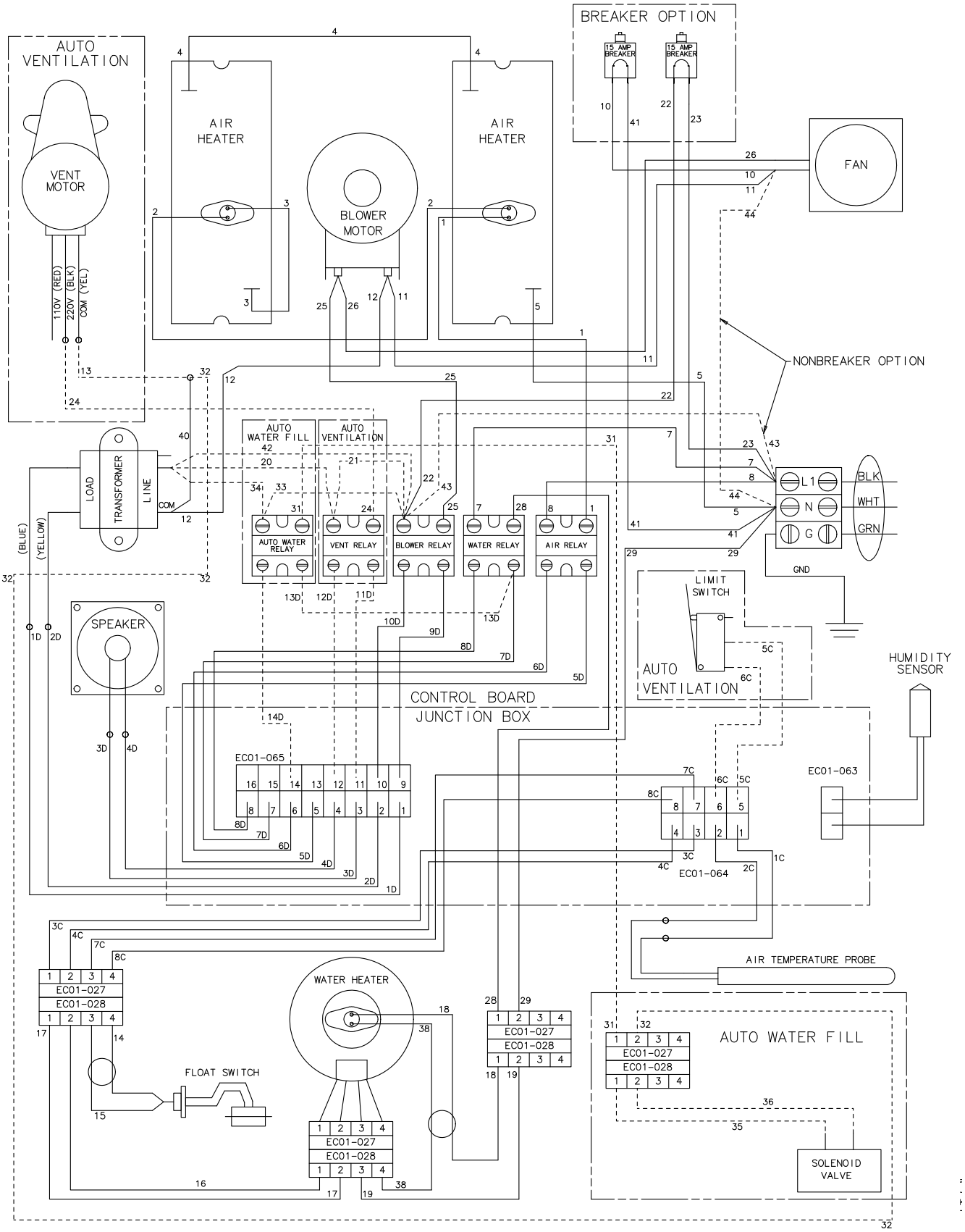
MODEL HHC980/983
200/208/240V
50/60 Hz, 1 PH
2+G WIRE



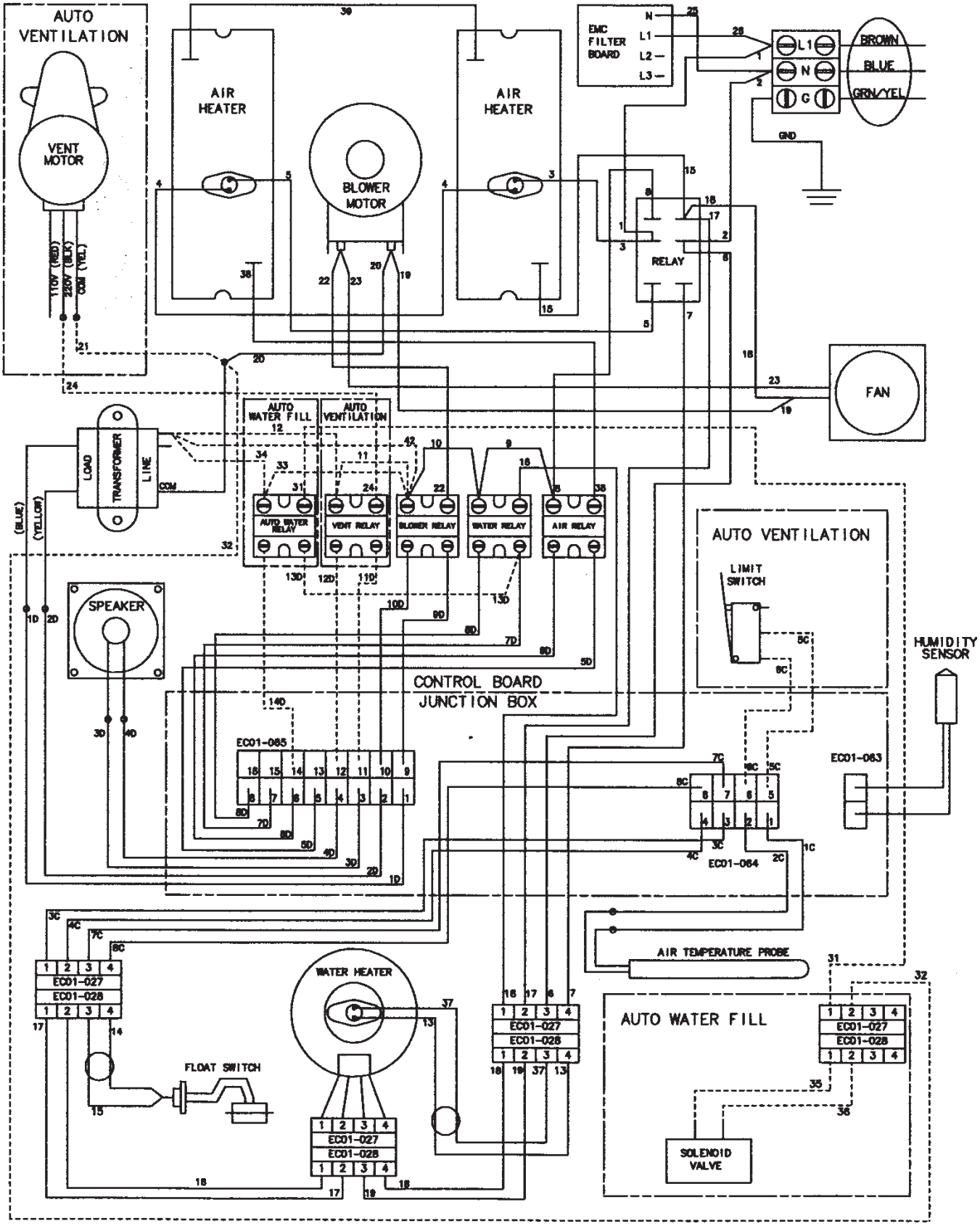
26983



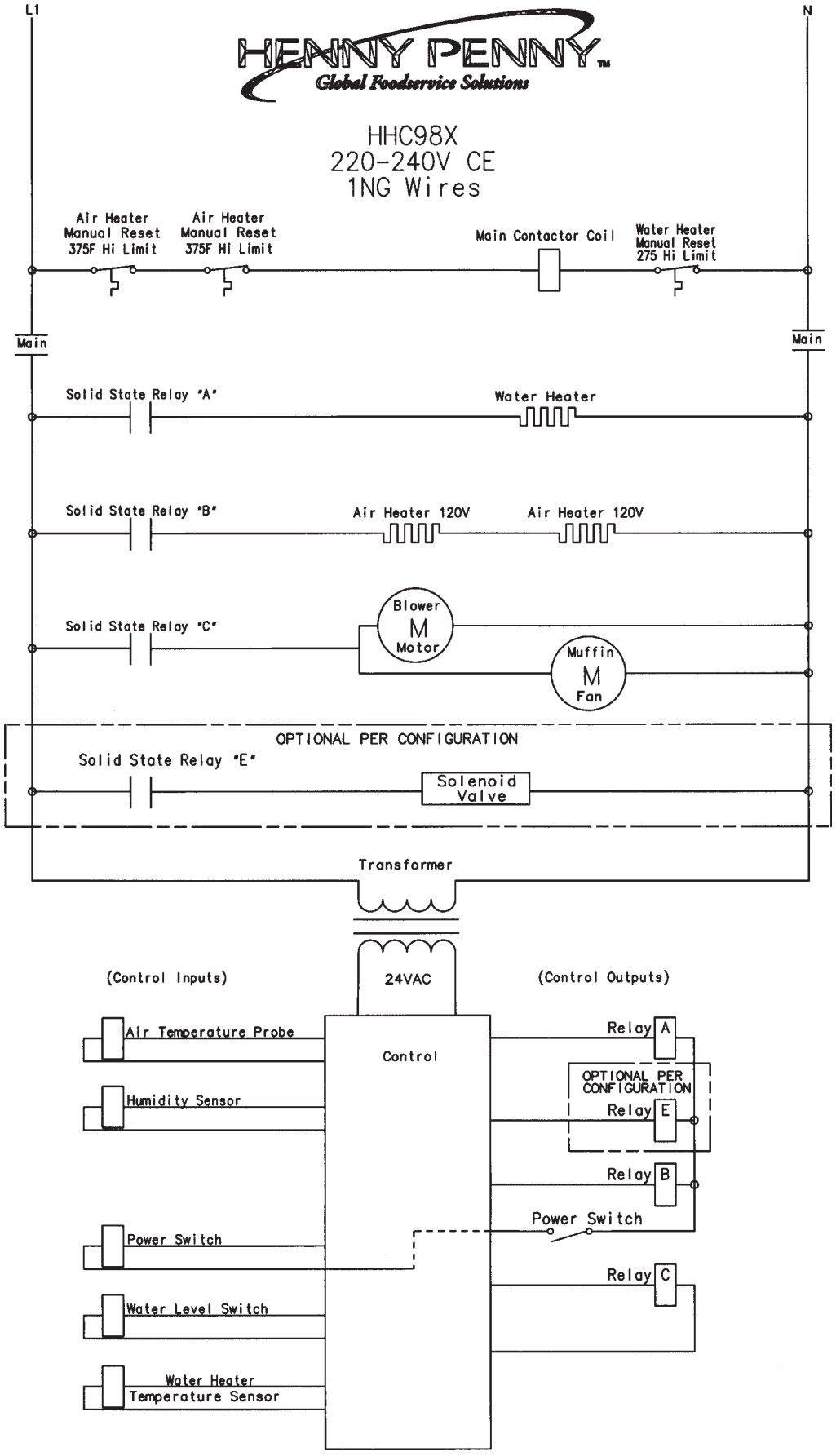
27485 - 120/60/1



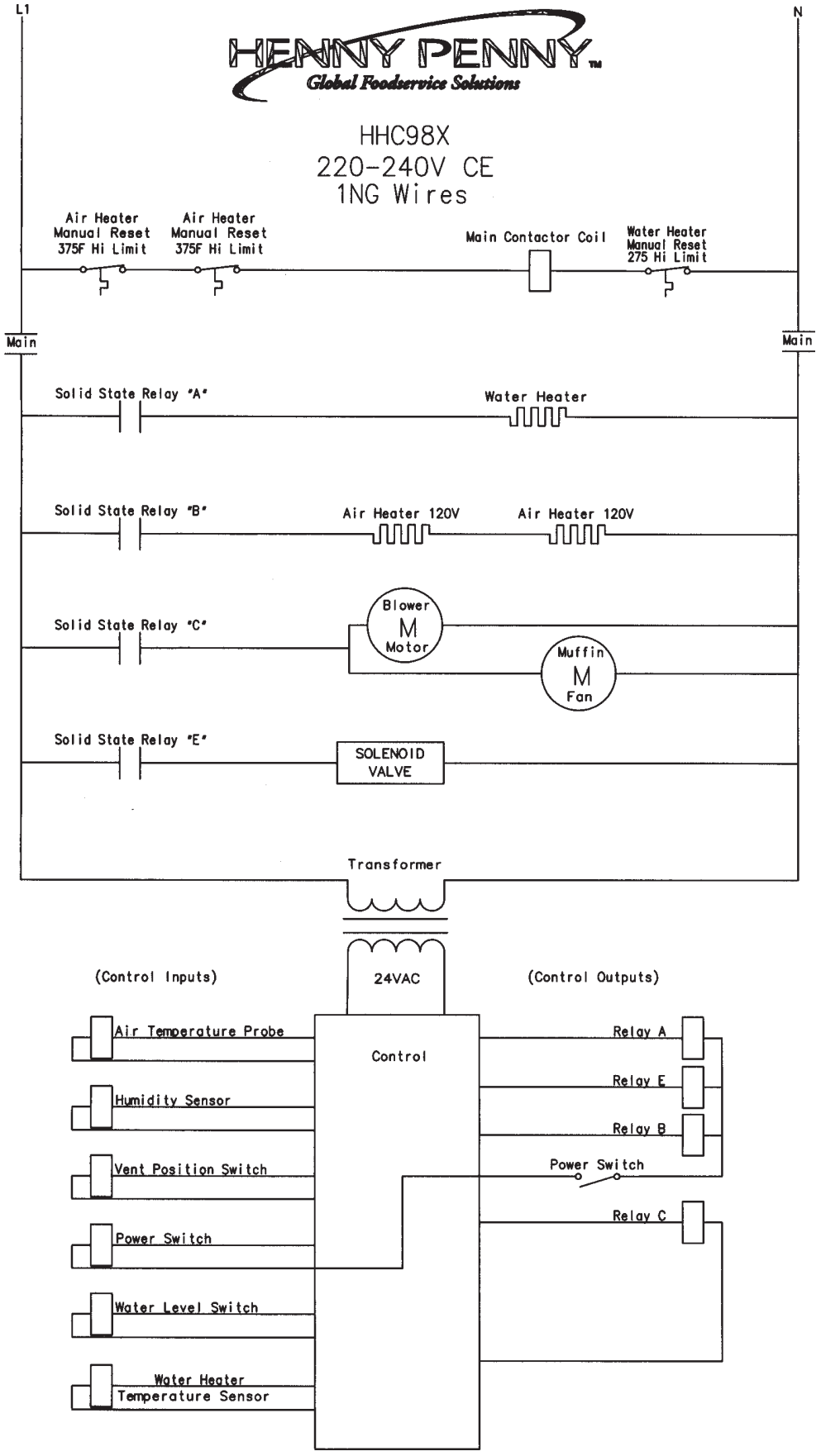
27486 - 208/240/60/1



27487 - 230/50/1


L1
N
HENNY PENNY
Global Foodservice Solutions
HHC98X
220-240V CE
1NG Wires
Air Heater Manual Reset 375F Hi Limit
Air Heater Manual Reset 375F Hi Limit
Main Contactor Coil
Water Heater Manual Reset 275 Hi Limit
Main
Main
Solid State Relay "A"
Water Heater
Solid State Relay "B"
Air Heater 120V
Air Heater 120V
Solid State Relay "C"
Blower M Motor
Muffin M Fan
OPTIONAL PER CONFIGURATION
Solid State Relay "E"
Solenoid Valve
Transformer
24VAC
(Control Inputs)
(Control Outputs)
Air Temperature Probe
Humidity Sensor
Power Switch
Water Level Switch
Water Heater Temperature Sensor
Control
Relay A
OPTIONAL PER CONFIGURATION
Relay E
Relay B
Power Switch
Relay C

68491



67702 (SPO-has vent position switch)

SECTION 4. PARTS INFORMATION

4-1. INTRODUCTION

This section lists the replaceable parts of the Henny Penny HHC-980/983 units.

4-2. GENUINE PARTS

Use only genuine Henny Penny parts in your cabinet. Using a part of lesser quality or substitute design may result in damage to the unit, or personal injury

4-3. WHEN ORDERING PARTS

Once the parts that you want to order have been found in the parts list, write down the following information:

Example:	Item Number	4
	Part Number	16684
	Description	Cooling Fan

From data plate, list the following information:

Example:	Product Number	HHC980.0
	Serial Number	AW001IE
	Voltage	208 Volt

4-4. PRICES

Your distributor has a price list and will be glad to inform you of the cost of your parts order

4-5. DELIVERY

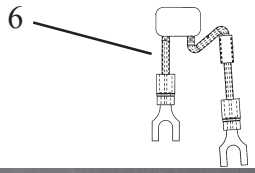
Commonly replaced items are stocked by your local distributor and will be sent out when your order is received. Other parts will be ordered, by your distributor, from Henny Penny Corporation.

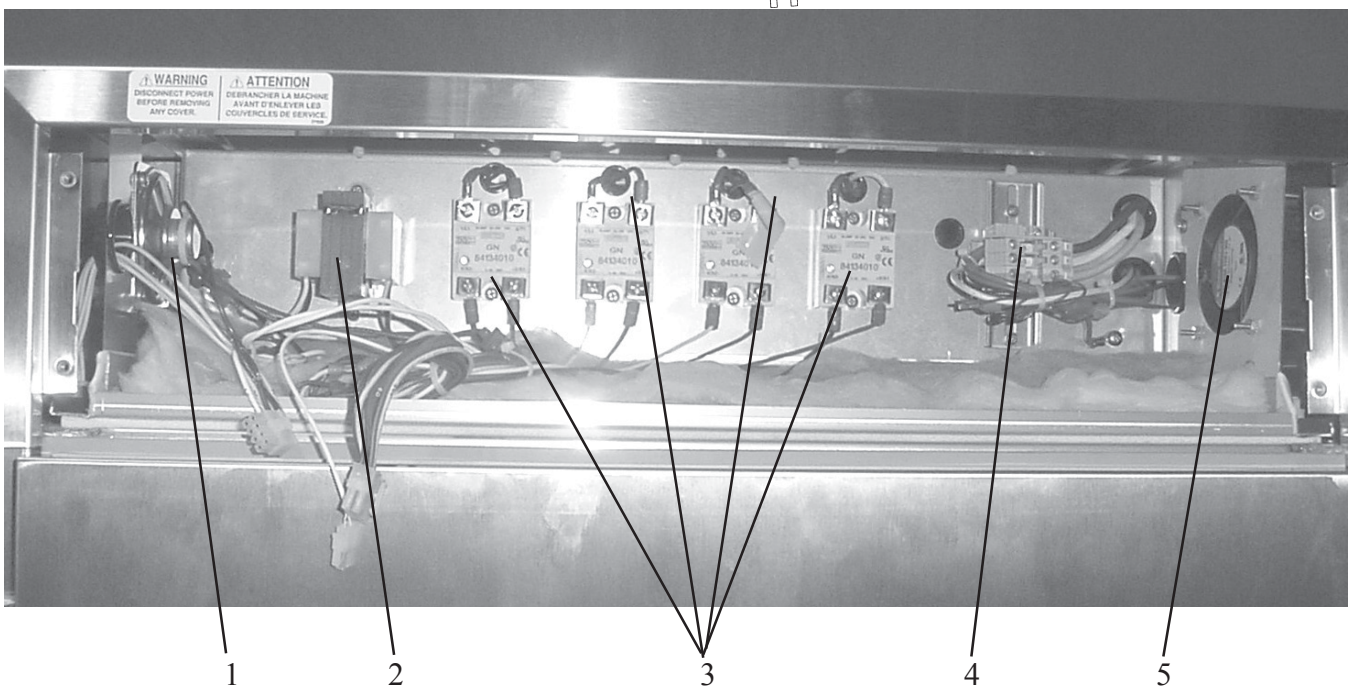
4-6. WARRANTY

All replacement parts (except lamps and fuses) are warranted for 90 days against manufacturing defects and workmanship. If damage occurs during shipping, notify the carrier at once so that a claim may be properly filed. Refer to warranty in the front of the manual for other rights and limitations.

4-7. RECOMMENDED SPARE PARTS FOR DISTRIBUTORS

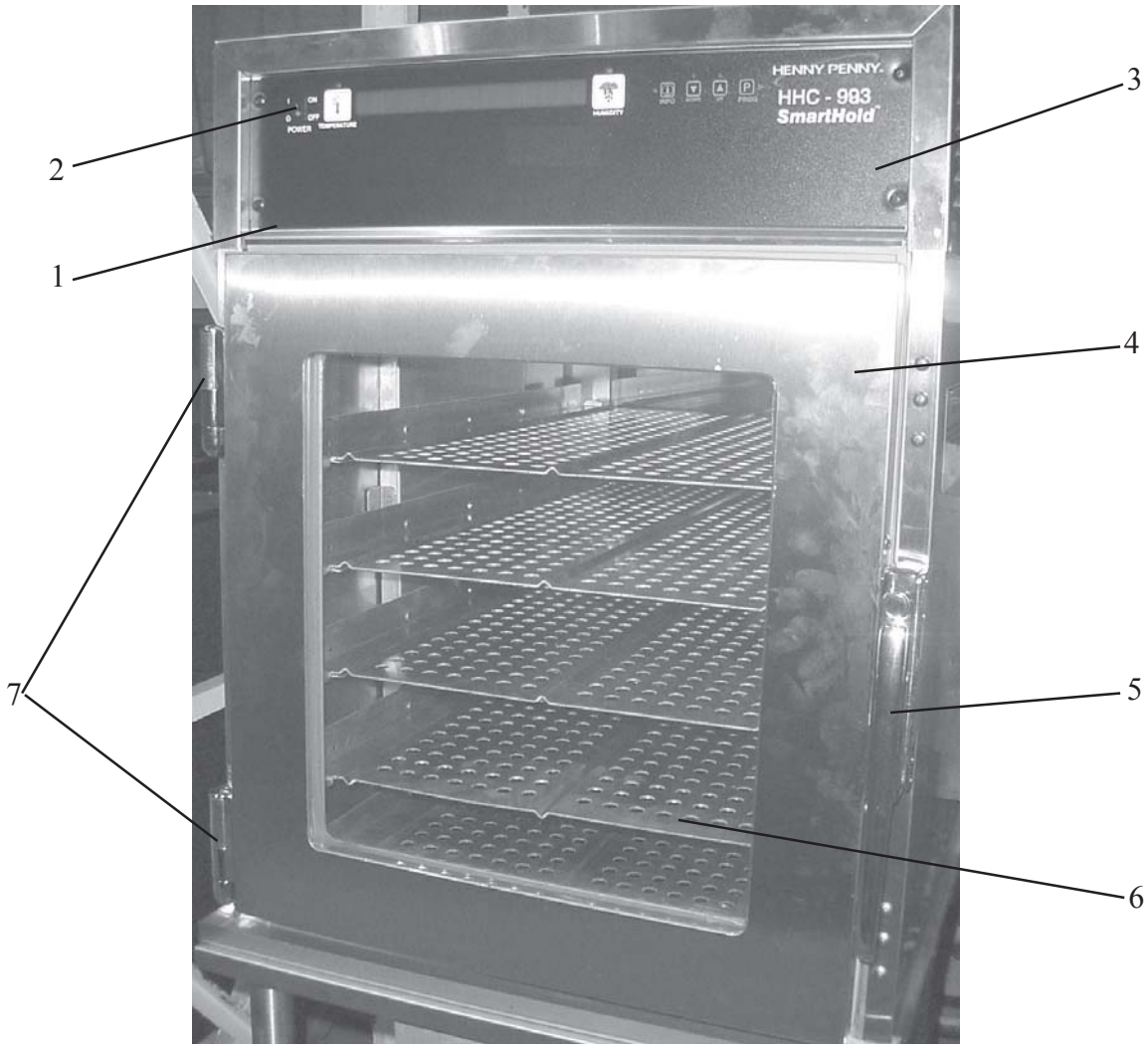
Recommended replacement parts, stocked by your distributor, are indicated with √ in the parts lists. Please use care when ordering recommended parts, because all voltages and variations are marked. Distributors should order parts based upon common voltages and equipment sold in their territory





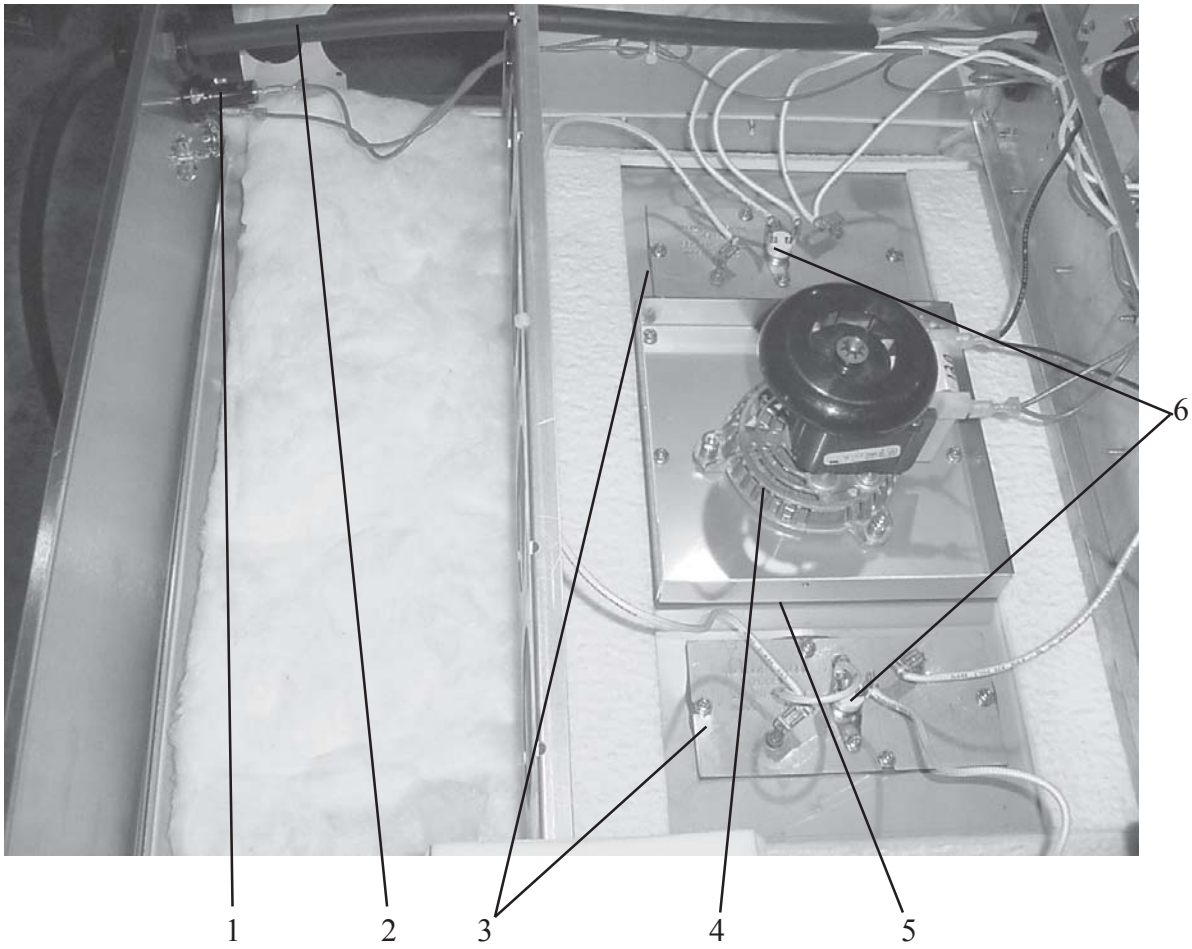
Item No.	Part No.	Description	Quantity 980	Quantity 983
√ 1	63419	Speaker Assembly	1	1
√ 2	63460	Transformer Assembly - 120V Pri.	-	1
√ 2	63459	Transformer Assembly - 208/240V Pri.-24V Sec.	1	1
√ 3	40645	Relay - 25A - Solid State	4	4
4	63832	Terminal Block Assembly	1	1
√ 5	16684	Cooling Fan Assy - 120V	-	1
√ 5	16688	Cooling Fan Assy - 220V	1	1
√ 6	66879	Assy - Resistor Capacitor	1	1

√ recommended parts



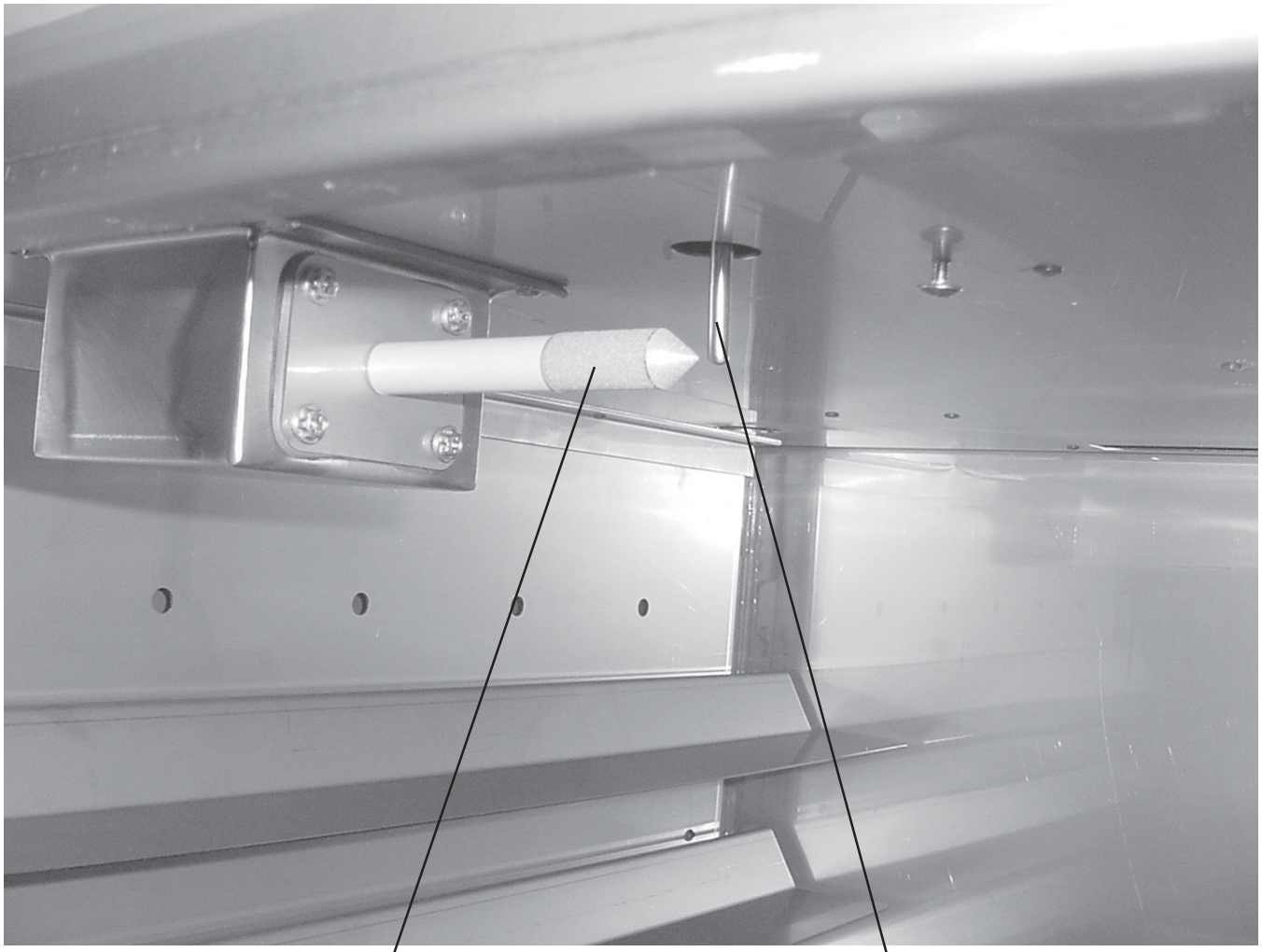
Item No.	Part No.	Description	Quantity 980	Quantity 983
√ 1	14863	Kit - Control Board - 980	1	-
√ 1	14864	Kit - Control Board - 983	-	1
√ 2	63464	Power Switch	1	1
3	65113	Decal - HHC-980	1	-
3	65114	Decal - HHC-983	-	1
4	32768	Assy - 980 Glass Door - RHTop	1 or 2	-
4	32769	Assy - 980 Glass Door - RH Bottom	1 or 2	-
4	32770	Assy - 980 Glass Door - LHTop	1 or 2	-
4	32771	Assy - 980 Glass Door - LH Bottom	1 or 2	-
4	32774	Assy - 983 Glass Door - RH	-	1 or 2
4	32775	Assy - 983 Glass Door - LH	-	1 or 2
4	70730	Assy - 980 SS Door	1 or 2	-
4	70732	Assy - 983 SS Door	-	1 or 2
5	14272	Kit - Door Handle	2 or 4	2
6	24844	Pizza Trays (Optional)	10	5
6	74529	Wire Grid	10	5
7	14271	Kit - Door Hinge	4 or 8	4
8*	27149	Door Stops (RH-RH & LH-LH pass thru units)	4	-

√ recommended parts/*not shown



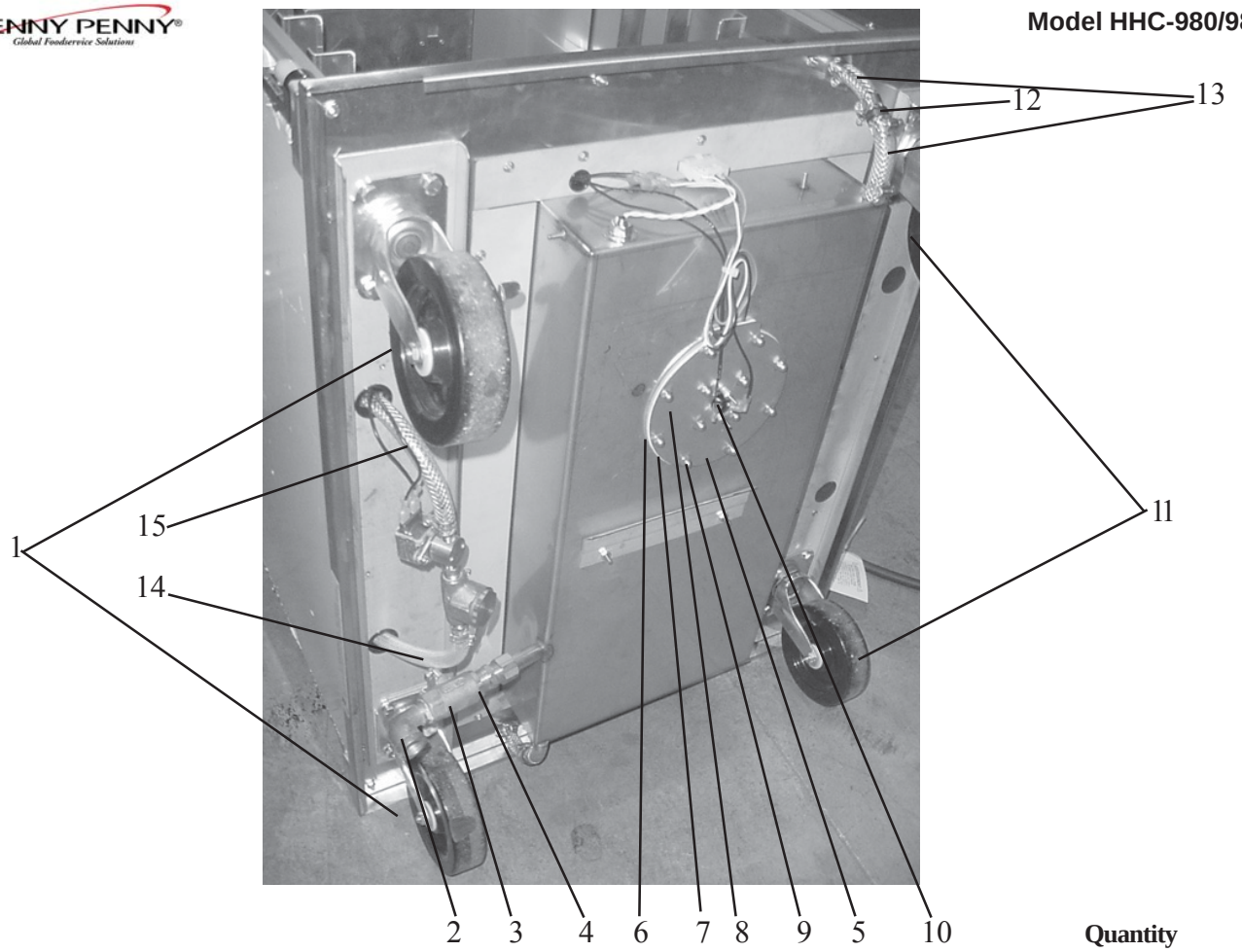
Item No.	Part No.	Description	Quantity 980	Quantity 983
√ 1	18364	Fuse Holder Assembly	2	1
√ 1	EF02-007	Fuse - 15 Amp	2	1
√ 1	EF02-006	Fuse Holder	2	1
2	26906	Power Cord Assembly - 120V-20A	-	1
2	27312	Power Cord Assembly - 250V-20A	1	-
2	63870	Power Cord Assembly - 120V-30A	1	1
2	63927	Power Cord Assembly - 120V-50A	1	-
2	63930	Power Cord Assembly - 208/240V-20A	1	1
√ 3	64285	Air Heater Assy-1000W-104V (208V units) (includes 63815 gasket)	2	-
√ 3	64128	Air Heater Assy-1000W-120V (includes 63815 gasket)	2	-
√ 3	64126	Air Heater Assy-600W-120V (includes 63815 gasket)	-	2
√ 4	63363	Blower - Motor 120V	-	1
√ 4	63362	Blower - Motor 208V	1	1
√ 4	63361	Blower - Motor 240V	1	1
5	63814	Gasket - Plate - Motor Mounting	1	1
√ 6	18201	Sensor - High Limit - 335 Deg.	2	2
√ 7*	51068	Assy - EMC Filter Board	1	1

√ recommended parts
*not shown



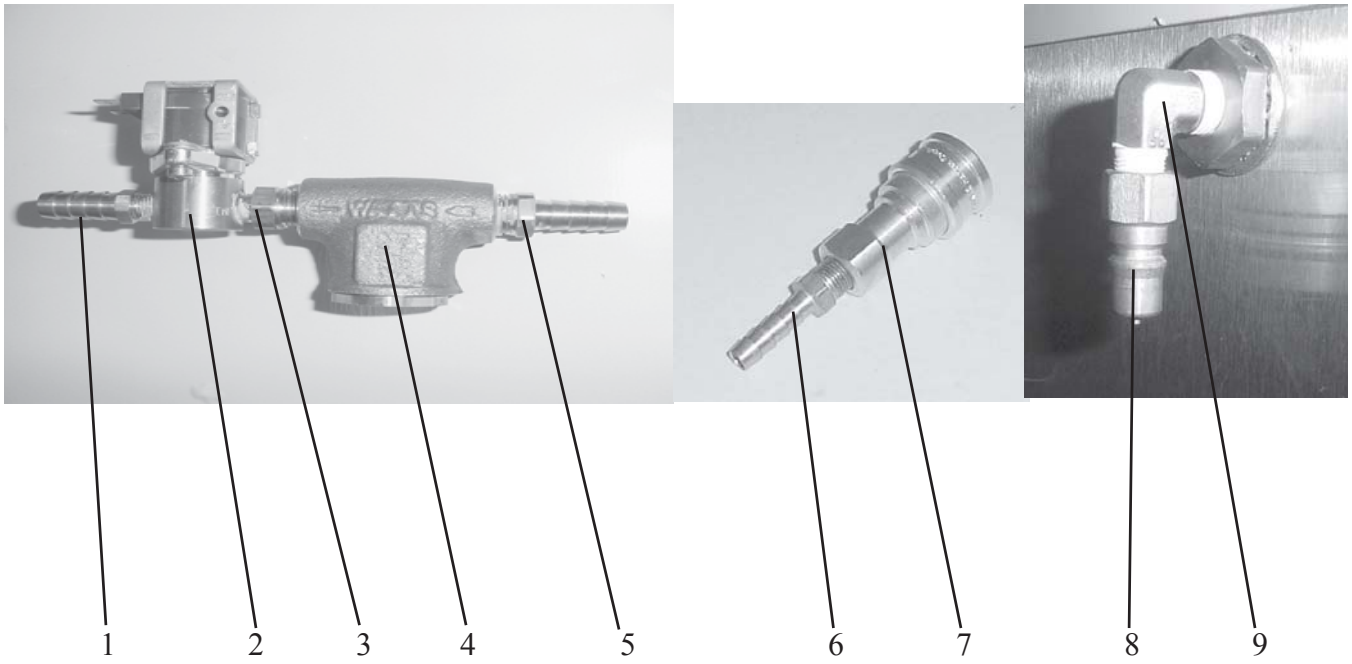
Item No.	Part No.	Description	Quantity 980	Quantity 983
√ 1	14390	Kit - Humidity Sensor	1	1
√ 2	64283	Probe-Air Temp	1	1
√ 3*	14391	Kit - Calibration Board	1	1

√ recommended parts
*not shown



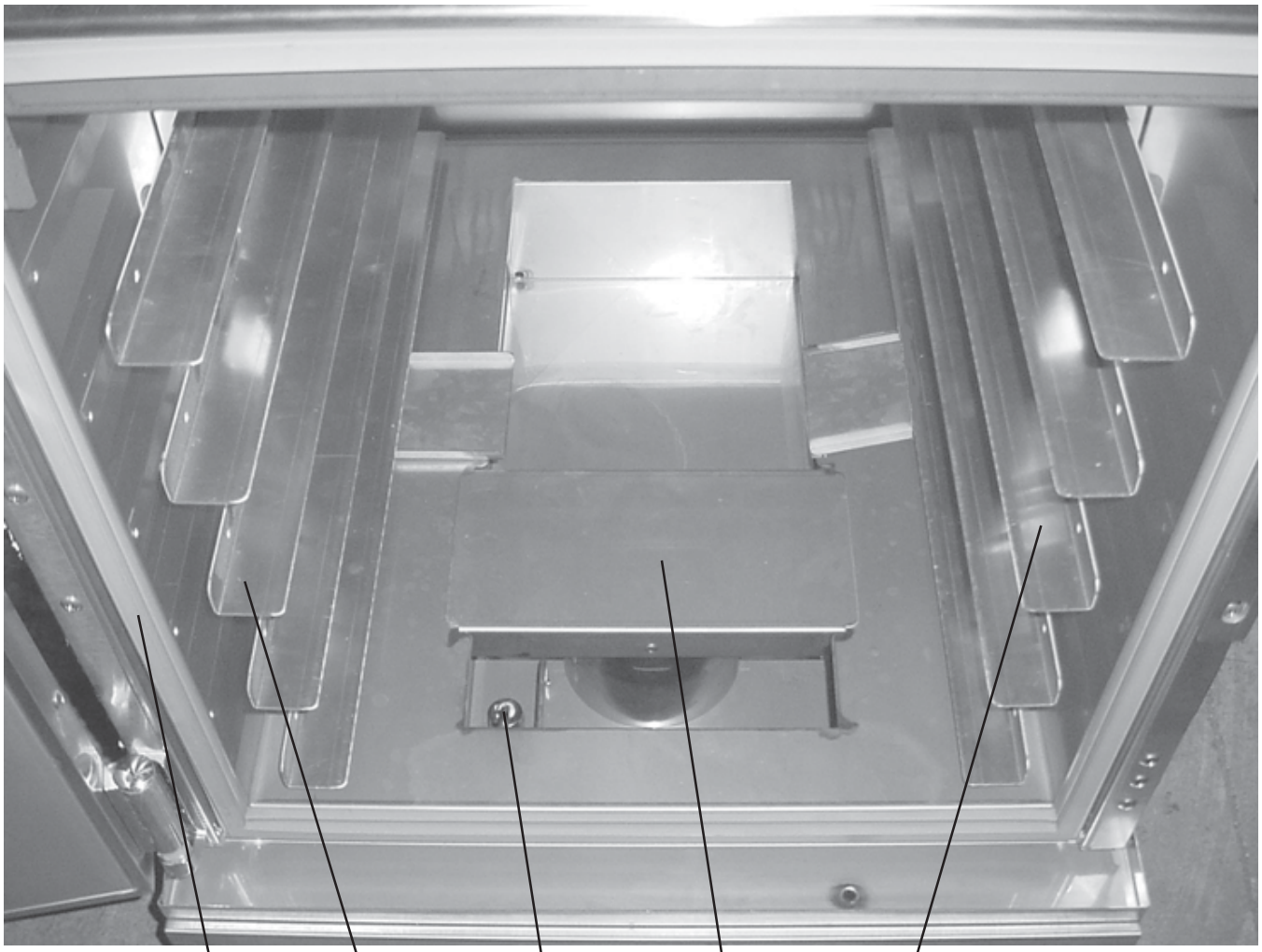
Item No.	Part No.	Description	Quantity 980	983
1	27155	Caster	2	2
1	27321	Caster - Dual 2 in. - Swivel (under counter models)	-	4
2	FP01-127	1/2 x 1/2 90 Degree Street	1	1
2	FP01-167	Elbow - 90 Deg. 1/2 x 3/3 BR Street (countertop models)	-	1
3	63389	Valve - Drain w/Handle	1	1
	39169	Handle - Drain (983s w/casters)	-	1
3	27359	Valve - Drain (countertop & under counter models)	-	1
4	FP01-131	Male Connector - 5/8 Tube	1	1
4	FP01-159	Male Connector - 5/8 x 3/8 Tube (countertop models)	-	1
√ 5	14631	Kit - Water Pan Heater - 120V	-	1
√ 5	14632	Kit - Water Pan Heater - 208V	1	1
√ 5	14633	Kit - Water Pan Heater - 240V	1	1
6	71130	Spacer - Water Heater	1	1
7	68130	Insulator - Water Heater	1	1
8	67524	Plate - Water Heater Backing	1	1
9	NS02-007	Nut Hex Keps - #8-32 C	12	12
√ 10	63831	Hi Limit - Water Pan	1	1
√ 10	64297	Hi Limit - Water Pan - CE (manual reset)	1	1
11	27154	Caster - Locking	2	2
12	64154	Check Valve	1	1
13	63463	Water Pan Hose	2	2
14	26968-001	Hose - Water - 980/983 - 13 in.	1	1
14	67186	Tube - Water Inlet (copper) - WRAS	1	1
15	26968-003	Hose - Water - 980 - 69 in.	1	-
15	67229	Tube - Water Supply - 980 (copper-UK & Ireland)	1	-
15	26968-002	Hose - Water - 983 - 39 in.	-	1
15	67187	Tube - Water Supply - 983 (copper-UK & Ireland)	-	1
16*	64351	Cover - Water Pan Heater	1	1
16*	21031	Cover - Water Pan Heater - CE	1	1
16*	27344	Cover - Water Pan Heater (under counter models)	-	1

AUTO-WATER FILL UNITS



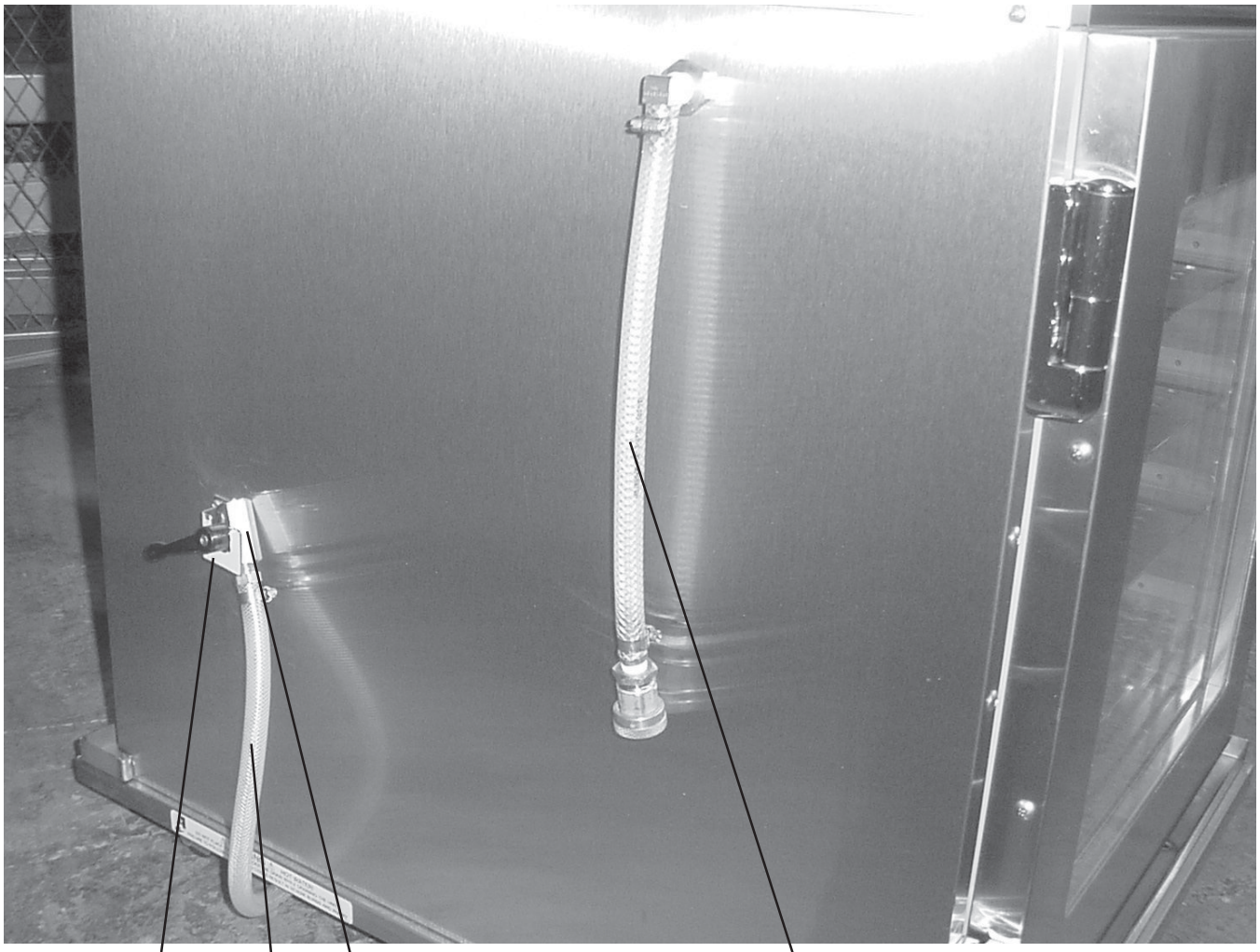
	Item No.	Part No.	Description	Quantity 980	Quantity 983	
	1	FP01-152	Fitting -3/8 Hose Barb -1/8 NPT	1	1	
√	2	14965	Solenoid - 120V		1	-
√	2	14967	Solenoid - 208V		1	1
√	2	14966	Solenoid - 240V		1	1
√	2	32646	Solenoid - 220/240V - WRAS	1	1	
	3	FP01-012	Nipple Reducing 1/4 to 1/8 Z	1	1	
√	4	25208	Water Strainer	1	1	
	5	FP01-053	Fitting 3/8 IDTubing -1/4 NPT	1	1	
	6	FP01-156	Fitting-1/4 Hose Barb-1/8 NPT	1	1	
	7	FP01-154	Socket-Quick Connect 1/8 IN	1	1	
	8	FP01-155	Plug-Quick Connect 1/8 IN	1	1	
	9	FP01-157	Elbow-Male 1/4 NPT X 1/8 NPT - 90	1	1	

√ recommended parts



	Item No.	Part No.	Description	Quantity 980	983
√	1	25643	Gasket - Door - 980	2 or 4	-
√	1	25793	Gasket - Door - 983	-	2
	2	24909	Assy. - 983Air Duct (use w/pizza trays)	-	2
	2	68012	Assy. - 983Air Duct (auto-water fill)	-	2
	2	68563	Assy. - 983Air Duct (manual-water fill)	-	2
	2	27384	Assy. - 980Air Duct - Upper (use w/pizza trays)	2	-
	2	27894	Assy. - 980Air Duct - 23 in. Upper - 5.0	2	-
	2	32511	Assy. - 980Air Duct - Lower (use w/pizza trays)	2	-
	2	68016	Assy. - 980Air Duct - Lower - 5.0 (auto-water fill)	2	-
	2	68562	Assy. - 980Air Duct - Lower - 5.0 (manual-water fill)	2	-
√	3	67297	Switch - FloatAssembly	1	1
	4	63525	Assy-Water Pan Cover & Ring (concentration ring)	1	1
	4	27305	Assy-Water Pan Cover & Ring-under counter model (concentration ring)	-	1
	4	SC01-076	Screw - #8-32 x 1/4 PH THD S	8	8
	4	ME50-048	Standoff - .25 dia.x .63 lg. #8-32 SS	4	4

√ recommended parts



Under Counter 983

Item No.	Part No.	Description	Quantity 980	Quantity 983
1	27357	Hanger - Drain Valve	-	1
2	26968-004	Hose - HHC-983 - 16 in.	-	1
3	27359	Valve - Drain (countertop & under counter models)	-	1
4	26968-001	Hose - Water - 980/983 - 13 in.	-	1